United Engineering Company Shipyard
(Todd Shipyard, Southern Pacific Company
West Alameda Yard)
2900 Main Street
Alameda
Alameda County
California

HAER No. CA-295

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PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
National Park Service
Department of the Interior
San Francisco, California

HAER CAL 1-ALAM, 4-

HISTORIC AMERICAN ENGINEERING RECORD
UNITED ENGINEERING COMPANY SHIPYARD
(Todd Shipyard, Southern Pacific Company West Alameda Yard)
HAER No. CA-295

Location: Oakland Inner Harbor — South Side
2900 Main Street
Alameda
Alameda County
California

U.S.G.S. 7.5 minute Oakland West, Calif. quadrangle
Universal Transverse Mercator Coordinates:
Zone 10:562,220 mE/ 4,182,650 mN, NW corner
562,530 mE/ 4,182,410 mN, S corner
562,780 mE/ 4,182,670 mN, E corner

Date of Construction: 1910-1915; conversion to shipyard and expansion 1941-1945.

Engineers & Architects Southern Pacific Company; United Engineering Company, Alben Froberg, John Hudspeth, Austin Wilmott Earl, and others.

Builders: Southern Pacific Company; United Engineering Company, American Dredging Company, and others.

Present Owners:

074-0891-003	074-0905-001-04
City of Alameda	Alameda Gateway Ltd.
City Hall	2900 Main Street
Alameda, CA 94501	Alameda, CA 94501

Present Use: Ship repair yard (Bay Ship & Yacht Co.) and 44 smaller tenants.

Significance: The United Engineering Company Shipyard, established in 1941 to build and repair ships for the U.S. Navy, is the last surviving of several large World War II shipyards in Alameda. United Engineering built 21 tug boats and repaired hundreds of ships during the war. Three of the seventeen surviving buildings and structures in the shipyard, including the largest building, were built in 1911 to 1915 as part of the West Alameda Inspection and Maintenance Shops for work on the Red Cars of the extensive East Bay electric car lines of the Southern Pacific Company. During both periods of its history, the facility was one of the largest employers in Alameda and played an important economic and social role in the city.

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Date: September 2001

I. DESCRIPTION

Overview

The United Engineering Company Shipyard occupies a generally triangular site of almost 50 acres at the north end of Main Street along the Oakland Estuary. The facility has undergone four separate phases of development and use:

1) maintenance yard of the Bay Area "Red Trains", the Southern Pacific Company's electric commuter trains (1911-1941);

2) conversion to maritime support facilities during World War II by the United Engineering Company (1941-1946);

3) post-war operation exclusively as a shipyard by Matson Navigation (1946) and then the Todd Shipyard Corporation (1947 lessee; 1959 owner to 1983); and,

4) diversification of uses under the ownership of Alameda Gateway, Ltd. (1983 to 2001).

The site today consists of a total of 19 structures with 14 dating from the period 1941-1948 when the shipyard was established. Three of the buildings were built in 1911 for the Southern Pacific Company's electric car shops, and two were built after 1948.

The shipyard was organized with administrative offices and security check points on the south near the street entrance, the large, pre-existing railroad shop building and its outbuildings at the center, and smaller shops and marine structures along the waterfront. In addition, a large storage building was located on the southeast edge along the Southern Pacific tracks for ease of delivering heavy equipment and supplies to the site. The waterfront was dominated by an outfitting wharf, a wet basin, and piers, all for the repair of ships. Two ways for building new ships were at the center.

Because the facility was developed in four different periods, and because there have been numerous alterations, it lacks a strong visual coherence. Nevertheless it is a functionally unified site.

Since its construction as a shipyard, there have been some changes. Most significantly, a large warehouse at the west end of the site and three piers have been demolished. Other changes do not significantly affect the character of the site which today is used by numerous tenants. Several of the current tenants are still engaged in ship repair work and related industries. Other tenants are engaged in a variety of non-related activities.

Building Names and Numbers

Through five owners and one basic change of use, buildings and structures at the site have been referred to in different ways. This has caused confusion in researching and labeling buildings and structures for documentation purposes. From the time the electric rail shops opened in 1911 until 1941, most buildings and structures were referred to by a descriptive name that denoted their function. During that period, the names of the principle buildings did not change. In 1941, when the Southern Pacific Railroad sold the property to the United Engineering Company and the property was converted from a rail maintenance facility to a shipyard, two of the three buildings that were retained were renamed to denote new uses. The third - the boiler house - was renamed the powerhouse (this occurred when the building was enlarged and different parts were labeled for the first time – "boiler" and "compressor" – probably referring to the separation and replacement of machinery rather than to new functions). Among the new buildings and structures in the shipyard, most were given descriptive names. Piers, ways, wharves, and dry docks built between 1941 and 1945 were numbered. During the entire period of use of the site as a shipyard, changing operations and changing functions were accompanied by changes in the names of buildings. A few buildings were labeled by building numbers on a 1951 site plan titled "Area Plan and Interceptor Profile." A different numbering system for the shipyard site appeared on a map dated 27 February 1953 labeled "Todd Shipyard Corporation, San Francisco Division, Alameda, California, Plot Plan San Francisco Division." The site was owned by Matson Navigation at that time but was leased in part to Todd Shipyard Corporation. Despite the existence of this numbering system, most plans, drawings, and other documents of the period continued to refer to the buildings exclusively by their names.

Following the purchase of the shipyard by Todd Shipyard Corporation in 1959, a different numbering system was adopted. This system was also used by the subsequent owner, Alameda Gateway, Ltd., after its purchase of the property in 1983, and it remains in use today (2001).

In order to provide a clear and consistent means of identifying the various buildings and structures, at the time the site was recorded in a survey for the City of Alameda in 1988, new numbers were assigned and used on the State of California Historic Resources Inventory form (DPR523). These numbers were used again in the 1998 Determination of Eligibility to the National Register, and they are used again in this HAER report.

Building and Structures

Building No. 1	Inspection and Repair Shops	HAER No. CA-295-A
Building No. 2	Office Building No. 137	HAER No. CA-295-B
Building No. 3	Gatehouse	HAER No. CA-295-C
Building No. 4	Boiler House	HAER No. CA-295-D
Building No. 5	Garage	HAER No. CA-295-E
Building No. 6	Warehouse	HAER No. CA-295-F
Building No. 10	Electrical Services and Switching Station	HAER No. CA-295-G

Building No. 12	Office and Substation	HAER No. CA-295-H
Building No. 14	Control House for Dry Dock	HAER No. CA-295-I
Structure No. 15	Pier 4	HAER No. CA-295-Q
Structure No. 17	Wet Basin	HAER No. CA-295-R
Building No. 18	Engineering Building	HAER No. CA-295-J
Building No. 19	Bending Shop and Oven	HAER No. CA-295-K
Building No. 20	Bending Shop and Oven	HAER No. CA-295-L
Building No. 21	Office and Firehouse	HAER No. CA-295M
Building No. 25	Boiler Maker's House	HAER No. CA-295-O
Structure No. 27	Crane	HAER No. CA-295-P

II. ARCHITECTURAL AND ENGINEERING INFORMATION

Southern Pacific Company West Alameda Yard, 1911-1941

Initial Construction 1910-1911

Before construction began on the shops for the new electrified rail system in the East Bay in 1910, there was a roundhouse at the site which had to be demolished. This was a Southern Pacific facility which served steam locomotives. Nothing more is known about it — when it was built or if it was associated with other buildings or structures.

The new facility, known as the West Alameda Yard or the West Alameda Car Shops, was completed in 1911 and remained in operation until 1941. From the beginning, the facility consisted of one very large building, four small buildings, several storage tanks, a system of water lines with hydrants, a rail yard, and a system of poles and overhead trolley wires.

The facility was located at the junction of two lines — a line to Oakland via a bridge at Webster Street and a line to Alameda via Pacific Street — which ran parallel from this point to the ferry depot to the west. The main building, the Inspection and Repair Shops, and the rail yard were oriented east-west so that the most direct approaches to the facility were either from Oakland or from the ferry depot.

There were 17 rail lines at the facility. One line, Track No. 1, ran outside the Inspection and Repair Shops on the south. Six lines, Tracks No. 12 through 17, ran outside the Inspection and Repair Shops on the north — these constituted the storage and staging yard. Ten lines ran into or through the building.

In addition to these tracks that were part of the facility, several passenger lines ran adjacent to it. Two of these, the 14th Street Line from Oakland to the ferry depot, ran on an east-west alignment north of the yard. Two others ran on a north-south alignment from the Alameda lines via Pacific Street and curved westward to the ferry depot. A spur from this line entered the West Alameda

Yard and, from a wye south of the Inspection and Repair Shops building, branched to the east and west ends of the yard.

Tracks No. 9, 10 and 11 ran through the north bay of the building - the inspection shop - with 38-inch inspection pits under each line. Three pairs of large double doors at each end of the 460-foot long space provided access to the three lines. In each inspection pit, there was a compressed air line, a 600-volt DC testing line, and a 220-volt AC line for lighting. Electric light was also provided by two-light incandescent fixtures on the side walls and by four-light incandescent fixtures hanging from the roof trusses. The inspection shop could accommodate 18 cars at one time, a six-car train on each track.

Tracks No. 6, 7, and 8 entered the high, skylit central bay housing the repair shop and the machine shop. Track No. 6 passed through the bay at each end. Tracks No. 7 and 8 entered at the west end and terminated inside. In the repair shop at the west end, there were 24-inch deep repair pits under the tracks, and space to accommodate nine cars in the shop at one time. East of the repair shop was the machine shop with a wheel lathe, a boring mill, and a wheel press. A 20-ton crane ran the length of this bay so that heavy parts or whole cars could be picked up in the repair shop and moved to the machine shop and back. The extra height of this bay provided room to carry lifted parts over cars in the repair shop. Because of the extra height, in addition to pit and wall lights, ten-light fixtures hung from the trusses.

Tracks No. 2, 3, 4, and 5 entered the south bay — the paint shop. Unlike the north and central bays, the main south bay was only 260 feet long. Track No. 2 passed through the bay at each end. Tracks No. 3, 4, and 5 entered from the west and terminated inside. The paint shop had a capacity of 12 cars at a time. Moveable scaffolding provided access to the different areas of the cars. Hot air was blown through floor ducts for drying. Outside the south bay at the west end was the car washing area.

East of the main portion of the south bay was a shorter and narrower section of the building with a variety of functions. Along the south side of most of this section was a rail loading dock served by Track No. 2 — the one track that ran through both ends of the paint shop. Adjacent to the paint shop was a paint mixing room, a brass dipping room, and a seat and sash washing room that also housed the heater and fan blower for the paint room dryers. Next to these rooms, which functioned as part of the paint shop, there was a two-level stock and receiving room. This room was served by an elevator and provided space for materials and supplies used throughout the yard, including seven oil storage tanks with Bower self-measuring pumps.

The space next to the storeroom was originally an electrical substation where 13,200-volt power from the Fruitvale Powerhouse was transformed for use in the yard for lights and machinery. According to a 1912 article in *Electric Railway Journal*, the equipment in the substation included:

"Three 100-kva transformers, which transform the incoming line voltages of 13,200 volts to 220 volts, for shop-lighting system and AC motor-driven tools.

Two 50-kw motor-generator sets, which furnish 220 volts for the DC motor driven shop tools.

One 26-kw 1200-600-volt dynamotor for supplying the 600-volt DC line in the pits for testing out car control apparatus.

One 50-kw frequency changer, which transforms 25 cycles at 220 volts to 60 cycles at 2300 volts, to furnish current for lighting station buildings, yards, etc.

Two, 25-kva, 13,200-2300 volt-transformers for supplying current for the interlocking and block signal system.

The equipment also includes a concrete bus structure and an eleven-panel switchboard containing the necessary instruments and switches for the control of the above apparatus" (*Electric Railway Journal*).

Next to the substation was a locker room and washroom area, described as "very complete in its equipment, including several shower and tub baths" (*Electric Railway Journal*). Men's facilities were on the ground floor and a small ladies toilet was on the second floor.

At the east end of this section of the building on the ground floor was a small shop for air brake repairs, electrical repairs, and the armature room. These functions shared a single space that opened into the machine shop in the central bay. Upstairs, there were rooms for the superintendent, chief clerk, office force, files, and the general foreman. The general foreman's office looked into the machine shop. The other offices had outside windows.

While the principal functions of the West Alameda Yard were accommodated in the Inspection and Repair Shops building, essential support functions were housed separately. East of the main building was a two-story structure housing the inspection foreman's office and motormen's headquarters. East of this building was a blacksmith's shop with a 1000-pound steam hammer, a punch, shears, and two forges. South of the main building was a boiler house with a 100-horsepower marine boiler, a 500-gallon fire pump, and a 250-cubic-foot air compressor.

South of the boiler house was a 65,000-gallon water tank, linked to the boiler house by an eight-inch line. From the boiler house, a system of six- and four-inch lines carried water to both ends of the main building and along both sides of the south bay.

Near the water tank were three oil sumps and a 5000-barrel oil tank

Safety System, 1911

The repair and maintenance of the electric cars involved working amidst extremely high voltages and an extensive safety system was in place to reduce fatalities. The system controlling the energizing and grounding of the shop's overhead trolley wire was in the care of the shop foreman and was organized as follows. The trolley wire in the shop was insulated from that in the yard by a section insulator located at the top of the door-frame. The yard wire was continuously energized at 1200 volts. The shop wire was connected to the yard wire through a system of two circuit breakers known as "yard circuit breaker No. 1" and "house circuit breaker No. 2" which allowed the shop wire to be energized or grounded as needed. "Yard circuit breaker No. 1" was protected by a 500-ampere copper fuse and served to energize the shop trolley wire only when the operating switch was held in the "on" position and circuit breaker No. 2 was open. "House circuit breaker No. 2" served to ground the shop trolley wire and automatically sounded an alarm when the circuit was switched open. Two lamps were connected to the switches controlling the circuit breakers. When the shop wire was energized the red light was on and when the shop wire was grounded a green light showed. When the wires were not energized but also not grounded, no light was on. The key to the box containing the switches that energized and grounded the overhead shop trolley wire was in the care of the shop foreman. An alarm automatically sounded when the foreman opened the switch box and again when he opened circuit breaker No. 2. The operating switch was supplied with current from the 220-volt shop circuit and was protected by a 3-ampere fuse.

Evolution of the Rail Yard

During its 30 years, as an inspection and repair facility for electric cars, the West Alameda Yard underwent only minor changes, because its primary function did not change and because there do not appear to have been significant changes in the technologies of its operations. The changes that did occur can be chronicled from a series of plans, each of which is discussed below.

A plan of the fire protection system dated 12 June 1918, showed few changes. The east end of the paint shop was subdivided by a partition and labeled "carpenter shop". The most significant changes were suggested by the renaming of and addition to power-related features. The substation space in the main building was renamed "compressor and dynamo room", and the boiler house was renamed "engine room". In addition, a gasoline tank and a gasoline tank house were built west of the boiler house.

A 1923 site plan (Ford, p. 107) showed a large car wash platform outside the west end of the north bay of the main building. Two transit stations were shown at the periphery of the yard — the West Alameda Station for the Webster Street Line on the north side of the yard, and the West Alameda Station for the Alameda Loop Lines on Main Street southwest of the main building. East of the main building was a landscaped garden and parking area. This consisted of a rectilinear grid of parterres (ornamental flower beds) and parking lots divided by walkways. Three units of the grid were devoted to parking and four were labeled as lawns. At the common

corner of four of the units of the grid was a round feature (a fountain?). The three parking lots surrounded a lawn.

On a pair of site plans from the 1920s, the West Alameda Station Plan (April 1925, revised January 1928) and a partial plan of the West Alameda Scrap Handling Facilities (April 1926; revised April 1928), there were numerous additions to the yard of small structures and features. Among these were an outbuilding south of the boiler house (14 by 16 feet), a sandblasting building (10 by 50 feet), a tool house, a cement house (10 by 20 feet), two features labeled "water col", a garage (67 by 17 feet), a store house (31 by 9 feet), a conduit house (8 by 12 feet), an air reservoir, a transformer rack (18 by 10 feet), a materials platform (22 by 60 feet), a store room (10 by 20 feet), an acetylene shed, a babbit house (14 by 7 feet), sand bunkers, and a gravel platform - all south of the main building. East of the main building were a scrap bin (7 by 14 feet), a scrap platform (14 by 14 feet), a high platform (6 by 36 feet), a coal bin (7 by 13 feet), and an incline. In the railyard, the poles for the trolley lines were shown as wooden poles, many with electric lights. On the Alameda line, tubular steel poles were used and on the Oakland line, trussed steel structures were used. East of the landscaped garden and parking area was a hot house (10 by 18 feet) and a flower bed (5 by 16 feet) with a hose cart nearby to the south.

On these same plans, a few details were shown about the surrounding land uses. Across Main Street, southwest of the main building, was a structure for the Golden Gate Gun Club. North of the yard along the shoreline of the estuary, there were 19 small structures in the water labeled "ark" and 13 unlabeled structures. Among these, all but two arks — houseboats — were on that portion of the site leased by Southern Pacific. In addition, also on leased land, there was a hydroplane hangar on the north shore, northwest of the main building.

The last record of the property during the Southern Pacific era was shown on a site plan dated 7 July 1941 identifying "Retire Trackage and Facilities". Facilities at the site at that time were very similar to those shown on the plans of the 1920s. South of the main building, the conduit house was enlarged and the adjacent store house was replaced by a structure labeled "GMO". A new garage was built south of the boiler house, an unidentified structure (possibly a tank) was built near the northeast corner of the boiler house, and a butane gas facility was built southwest of the boiler house. This facility consisted of a 66-foot track, a parked tank car, and a rectangular galvanized wire fence around the tank car measuring 40 by 81 feet.

East and west of the main building, the only changes were new drop pits at either end. Outside the east end of the north bay was a small drop pit (5 by 23 feet). Outside the west end of portions of the north and central bays was a large drop pit (25 by 45 feet).

On this map, all of the arks, the unlabeled buildings, and the hydroplane hangar shown on the plans of the 1920s were gone.

United Engineering Company Shipyard, 1941-1946

The United Engineering Company bought the West Alameda Yard of the Soutbern Pacific Company in 1941. Initially, United Engineering converted the rail facility to a shipbuilding yard. Subsequently, United Engineering added ship repair facilities to the yard. In 1946, United Engineering sold the yard to Matson Navigation. After 30 years of ownership by Southern Pacific, when the purpose of the yard remained the same and few significant physical changes were made, the five years of ownership by United Engineering were marked by continuous and radical changes. The pace and character of changes in the shipyard reflected the wartime context of the operation. The changes in the shipyard can be chronicled in a series of site plans, discussed below.

When United Engineering took over the site, the five original 1911 buildings of the Southern Pacific yard remained in place — the main building, the two-story office and the blacksmith shop east of the main building, and the boiler house and boiler house outbuilding south of the main building. A few of the 19 principle lines of railroad track were retained or partially retained. In the yard north of the main buildings, portions of three lines of track were retained. Within the main building, one through-line was retained and the stub of one line was retained. South of the building, one through line and the stubs of one line were retained. All other features — tracks, poles, sheds, tanks, and the machinery and furnishings — were removed. The only exceptions appear to have been the 20-ton crane in the central bay of the main building and the boiler and associated machinery in the boiler house. In addition, a 65,000-gallon water tank south of the boiler house remained.

After United Engineering took over the property in mid-1941, it quickly obtained a contract to build four tugboats. A site plan in January 1942, only 5 months later, showed the conversion of the property for shipbuilding purposes in that short period of time. Some of the original Southern Pacific buildings had new purposes. The main building, the old Inspection and Repair Shops building, was now labeled "machine shop and offices". The old boiler house and boiler house outbuilding were joined into one building by an addition, and the new ensemble was labeled "compressor and power house". The uses of other buildings appear to have been unchanged. The two-story concrete office building east of the main building was not labeled with a use. The blacksmith shop was still a blacksmith shop.

The organization of old and new structures at the site established a pattern that has been maintained by all subsequent operators of the shipyard. With the old Southern Pacific buildings at the center, administrative functions, employee checkpoints and services, storage of materials, and the main entry to the yard from Main Street were all located on the south side of the main building. New workshops and marine structures were located on the north side along the waterfront.

South of the main building, there were three new buildings — a guard house (50 by 15 feet), a one-story frame storage shed (67 by 16 feet), and a plumbing shack. In addition, the outline of a

very large proposed "main storehouse" (433 by 70 feet) was shown, overlapping the site of the plumbing shack.

North of the main building and along the waterfront the principle new features were four shipways and an outfitting wharf. Northwest of the main building, two shipways (Way No. 4 and Way No. 3) were built on a northwest-southeast alignment. Between these ways and serving both was a craneway measuring 22 by 221 feet. North of the center of the main building were two more shipways (Way No. 2 and Way No. 1) on a north-south alignment, each 52 feet wide. These were served by a common central craneway about 20 feet wide. Between these two pairs of craneways at the U.S. pierhead line was an outfitting wharf (250 by 37 feet) on a northeast-southwest alignment. A new rail spur was laid to the outfitting wharf.

In addition to these major structures, several new smaller structures were also built on the north side. In the space between the two pairs of ways and inland from the outfitting wharf, a tool room (14 by 20 feet), and a carpenter shop (irregular, 53 by 29 feet) were built. East of the ways, a concrete slab (50 by 36 feet) and an attached angle furnace (6 by 35 feet) were built. North of the blacksmith shop, there was a small shed (12 by 30 feet). The entire facility was enclosed by a woven wire fence.

Another map nine months later, dated 22 October 1942, showed substantial new construction and the creation of facilities for repairing ships as well as building them

Continuing the organizational pattern already established, on the south side of the main building, there was a new office building and half of the previously proposed new warehouse, along with a new rail spur. The one-story wood storage shed and the plumbing shed that had just been built in the area had been removed. Along with these changes, the security fence was partially relocated so that the entrances to the new office building and the guard house were outside the enclosed area.

The center of the facility was still dominated by the original Southern Pacific buildings. While the power house and the blacksmith shop remained in their previous uses, the small two-story office building had been converted to a switch house for incoming electrical power, and the sections of the main building had been labeled for their new uses. The old inspection shop in the north bay of the main building was now the plate shop. The old repair and machine shop in the central bay, with its traveling crane and high space, was strictly a machine shop. The paint shop in the west half of the south bay was a mold loft. The mix of uses in the east half of the south bay were replaced by a new mix, labeled office and warehouse. In relation to the new uses of the main building, outside the west end, the drop pit became a pickling pit, and four linear plate racks were built. Outside the east end of the main building was a small hospital.

The most extensive changes to the shipyard at this time were on the north side along the waterfront. Regarding the major structures, Way No. 4 and Way No. 3 were surrounded on three sides by subassembly racks. A deck for prefabrication of pilot houses was built near the foot of

Way No. 3. A less extensive area devoted to subassembly racks was built south and southeast of Way No. 2 and Way No. 1. The outfitting wharf was nearly doubled in length, and a bridge was built to it. An outfitting shop was built near the foot of the bridge. Between these major features, the carpenter's shop was enlarged and a small maintenance building was built next to the tool house.

On the east side of the shipyard along the waterfront several large new structures were built for ship repairing, comparable in scale to the ways and outfitting wharf for building new ships. These consisted of four piers (Pier No. 1, Pier No. 2, Pier No. 3, and Pier No. 4) and four dredged wet basins. In the easternmost and largest wet basin, there was also a 12,000-ton dry dock. Associated with these features were a new rail spur to each pier, a locker room and washroom building on Pier No. 1, a complex of small structures near the foot of Pier No. 4 labeled dry dock store room and office, a boiler shed near the foot of Pier No. 3, a pipe shop at the foot of Wet Basin No. 1, and a rigger's shop and electrical shop at the foot of Wet Basin No. 2.

Between Way No. 1 and Pier No. 1, the angle furnace and concrete slab was provided with a second slab and a nearby punch. North of these features was a new paint shop. East of these features was a large new structure housing the engineering department, the sheet metal shop, and facilities for women workers.

A map of the shipyard eight months later on 14 June 1943 showed the pace of change had slackened. The changes shown at that time would have had a minor impact on the look of the shipyard.

South of the main building, the large warehouse was doubled in size, and a cafeteria together with an addition to the cafeteria had been built near the entrance to the property from Main Street, outside the security fence.

In the central zone, no changes were shown on the map.

North of the main building, there were few changes. On the west side, dedicated to shipbuilding, the craneway between Way No. 4 and Way No. 3 was shown with an 85-foot boom, a toilet and a temporary electrical shop were added to the outfitting wharf and the outfitting shop was redesignated "marine machinist". Between the ways, the tool house was enlarged and there was a new oakum loft (for rope).

On the east side of the shipyard, dedicated to ship repair, there was a new dry dock control house near the foot of Pier No. 4. Pier No. 4 was equipped with a large Colby Crane, and additional functions were assigned to the rigger's shop and electrical shop — marine machinist, lockers, lavatories, and an electrical substation.

A site plan of the shipyard dated 10 February 1944 did not indicate any changes to the physical plant. It only showed an area at the west end of the shipyard that was to be leased (580 feet of

shoreline) and an area at the east end that was under consideration for leasing (1500 feet of shoreline). The lack of additional facilities was also suggested by a memo from the United Engineering Company to the Chief of the Bureau of Yards and Docks on 1 February 1946. In this memo was an itemized list of buildings and structures at the shipyard.

Post World War II Changes to the Shipyard, 1946 to 1984

After World War II, the United Engineering Company sold the shipyard to Matson Navigation in 1946, and Matson Navigation leased the shipyard to Todd Shipyards Corporation in 1948. The Sanborn Map of 1948 (which did not show the entire site, notably lacking the waterfront east of Pier No. 2) showed another period of dramatic change at the site in response to postwar conditions. Changes at that time showed the diminished capability for shipbuilding along with a continuing emphasis on ship repairing. Despite the changes at that time, the initial organizational pattern of the shipyard was maintained.

South of the main building, there were minor changes. Small structures were added to the ends of the main office building — a one-story garage at the west end and a small guard's office at the east end. The gatehouse was renamed the timekeeper's office. A small warehouse was built between the boiler house and the north end of the large warehouse.

In the central zone, there were minor changes that might have had a substantial impact on the look of the shipyard. This was especially the case outside the west end of the main building where the pickling vat and plate racks were removed. In their place was a punch and an extensive area for iron storage. In the main building itself, the west side of the south bay was no longer a mold loft but was half joiner shop and half warehouse. East of the main building, two small new structures were built, a new "primary substation" east of the hospital and an irregular one-story office east of the new substation.

The principal changes were north of the main building and on the west side of the shipyard. The most substantial change was the removal of Way No. 4 and Way No. 3. The spur that served the craneway between the ways remained in place. A small shop and a large new warehouse had been built west of the craneway, both overlapping the site of Way No. 4. The outfitting wharf, renamed Pier No. 5, was widened and lengthened at its outer edge. On Pier No. 5 was a new, narrow office building, a pump house and substation, and a lavatory. Substantial new fire-protection features were incorporated including automatic sprinklers under part of the wharf, a number of dry hydrants along the pier, alternately for fresh and salt water, and a fire boat dock at the east end of the pier. South of Pier No. 5, the marine machinists building had become a pipe shop, the oakum loft had become a caulker's storage building, the tool room was enlarged, and the maintenance building had become a repair shop. In addition, several new buildings had been built for a variety of purposes — storage, a paint shop, an office, two canteens, and two insulation department buildings.

Between the ways and Pier No. 1, an additional paint shop was built near the existing paint shop, and an addition was built to the engineering department building for welding. Between this area and the main building, there was an office and firehouse building.

A detailed site plan dated 9 August 1951 showed few substantial changes since 1948. South of the main building, the only changes shown were two small buildings east of the powerhouse. These were an aftercooler, associated with the compressor in the power house. The plan showed a "proposed compressor cooling water diversion" line leading eastward across a rail spur to a newly-leased parcel. This diversion line would have terminated at a ditch next to a new oil storage structure.

In the central zone, the only changes were a reconversion of the 1911 small, two-story structure to an office, and the reappearance of the pickling vats outside the west end of the main building along with a "proposed waste pickling acid diversion" line.

North of the main building, the only new structure was a dry dock building inland from the 10,500-ton dry dock in Wet Basin No. 3, and most importantly, a new 14,000-ton dry dock in Wet Basin No. 4. In addition, several buildings were labeled with old names, suggesting that this map may have been out of date. Near the outfitting wharf, the pipe shop was again the merchant machinist, the caulker's storage building was the oakum loft, and the maintenance building reappeared where a repair shop and a paint shop had been. The engineering building was relabeled the drafting room, and north of this at the water's edge was a landing float.

Records for the remainder of the period when the property remained exclusively as a shipyard are not complete. A list of facilities filed with the Alameda County Recorder at the time the property was sold from Matson Navigation to Todd Shipyards Corporation in 1959 suggests that the facilities had changed little if at all since 1951. Another list filed with the Alameda County Recorder in 1970 was similar. Because the terminology used in these lists varied from that on earlier site plans, and because the lists were not clearly keyed to plans, the conclusions that can be drawn are not definitive.

At the end of the period of ownership by Todd Shipyards Corporation and the end of the exclusive use of the property as a shipyard, a site plan was prepared by the new owner, Alameda Gateway, Ltd., showing the facility at the end of the shipyard era in 1984.

South of the main building, two small changes were shown — the cafeteria building and the aftercooler sheds were removed.

In the central zone, the principal change was the removal of the blacksmith shop and the construction of a large new structure — Building No. 140, with shops and a tool room on the first floor and a locker room on the second floor.

Again, the major changes were north of the main building and along the waterfront. On the west side of the shipyard, the old outfitting wharf was removed along with all of the small buildings

inland of the wharf and west of Way No. 2 and Way No. 1. Three new structures were in their place. Way No. 2 and Way No. 1 appear to have been converted to a "building slab". The building which housed the engineering department and the drafting room contained the product department above ground floor offices. North of this, the two paint shops and the landing float were gone.

On the east side of the shipyard, Pier No. 1 and Pier No. 3 were removed. The pipe shop and the marine macbinist shop at the foot of Wet Basin No. 1 and Wet Basin No. 2 were also removed.

At the end of the exclusive shipyard period, many changes had taken place in the shipyard, but representative examples remained of the principle types of features built for the ship repair side of the shipyard's business.

Diversification of Uses, 1984 to 2001

Following the purcbase of the property by Alameda Gateway, Ltd. in 1983, because a large shipyard was no longer economically viable, alterations were made to the property to address new market conditions. The main building was subdivided in phases from 1984 to the 1990s in order to accommodate a variety of smaller tenants. The north bay, which had been open from end to end, was partitioned into eight spaces. The central bay, which was also open from end to end, was partitioned into three spaces. The south bay was also partitioned into three spaces. New doors were cut in the exterior walls of the north and south bays and new concrete floors were poured to provide level surfaces. New tenants modified their spaces to accommodate new functions. For example, in 1987, Rosenblum Cellars built wood offices and tasting rooms inside the south bay.

Elsewhere in tbe yard, existing buildings and structures were demolished and new buildings were erected. Between 1984 and 1988, a large warehouse at the west end of the yard, the carpenter's shop near the bridge to Pier No. 5, the 10,500-ton dry dock west of Pier No. 4, and Way No. 2 and Way No. 1 were all removed. Pier No. 5 was rebuilt and the Colby crane was moved from Pier No. 4 to Pier No. 5. Between 1988 and 1998, an outhouse and a shed on the southeast side of the property were demolished. Between 1998 and 2001, the tank house, the hospital, and Pier No. 2 were demolished. During these years, a number of new portable structures were built along the waterfront, especially between the main building and Pier No. 5.

III. HISTORICAL INFORMATION

Southern Pacific Railroad

Railroads 1884-1910

Trains have played a major part in the development of Alameda. In the nineteenth century, railway and ferry service connected Alameda to San Francisco, Oakland, and southern Alameda County.

The first railroad in Alameda, the San Francisco and Alameda Railroad (SF&A) was built by A.A. Cohen in 1864. It was connected with a ferry service to San Francisco at the west end of Pacific Avenue in Alameda. From the Pacific Avenue station the railroad ran eastward along Railroad Avenue (Lincoln Avenue), swerving toward the north shore at Park Street and crossing the channel to Oakland at Versailles Avenue. It then continued down through San Leandro to Hayward. In 1869, Cohen and Co. sold the SF&A to Southern Pacific which added new ferries with provisions for freight cars and livestock pens.

In the meantime, James Fair and associates built a narrow gauge railroad known as the South Pacific Coast Railroad (SPCRR) which ran from Santa Cruz through San Jose and Newark before entering Alameda via Bay Farm Island. In Alameda, it ran west along Encinal Avenue until it merged with Central Avenue. Then it turned on to West End Avenue (Fourth Street) and ran north, crossing the marshland to Oakland. The SPCRR was completed in 1878 and served Alameda east of Versailles which had been left out of Cohen's route. This line was purchased by Southern Pacific in 1887.

In 1892, the tracks for a local streetcar service were laid along Santa Clara Avenue. This was the Alameda, Oakland, and Piedmont (AO&P) line. Up until the 1890s, this had been a horsecar line. In 1892 tracks were laid to make the AO&P an electric streetcar line.

Electrification

In the early 1900s, the Southern Pacific Railroad Company moved into electric traction by purchasing smaller independent electric railway systems throughout California. For example, by 1910 Pacific Electric of Los Angeles was a wholly owned subsidiary of Southern Pacific that dominated interurban transport in Southern California. In 1913, Pacific Electric advertised itself as "the largest electric railway system in the world". It maintained 600 route miles of track and ran 2300 interurban trains daily. Southern Pacific also acquired the Stockton Electric Railroad, the Peninsular Railway in Palo Alto and San Jose, the Visalia Electric Railroad, and the Fresno Traction Company, among others.

At the same time that Southern Pacific was purchasing small electric railway systems it developed a plan to electrify suburban lines in the San Francisco Bay Area. Electrification

involved rebuilding 29.3 miles of existing suburban track, and building 21.2 miles of new track and all the associated overhead trolley wires, street poles, and other equipment. When this work was complete, Southern Pacific had constructed the first electric traction system to utilize General Electric's new high voltage DC overhead system. The project was originally estimated to cost $4 million but the actual cost was $10.6 million when it was completed in 1912.

The electrification of the system took place in phases, beginning in Alameda. In April 1908, reconstruction began in Alameda on the Encinal Avenue Line. In the beginning of 1909, catenary trolley wire was strung over the center poles near High Street to prepare a test section. By the end of 1909, the new Encinal track was completed and Southern Pacific started grading on the Fernside Loop. In 1910, as work on track reconstruction continued, Southern Pacific began constructing the Fruitvale Powerhouse to supply electricity (along with three substations) for the East Bay lines. The powerhouse cost $900,000 to build and equip and when complete it was recognized by the American Institute of Electrical Engineering as an outstanding achievement in the field of power generation. Construction began on the West Alameda Shops in the same year. In the latter half of 1910, the electrification of the Webster and Lincoln street lines was nearing completion. The downtown Oakland station at 14th and Franklin streets was electrified and marked the entrance of the Southern Pacific electric trains into a stronghold of the Key Route system in June 1911. The Seventh Street line in West Oakland was rebuilt by November 1911.

The Berkeley lines were completed by February 1912, and the Melrose line through East Oakland to Dutton Avenue in San Leandro, the last piece of the system, was completed in October 1913. The rebuilding of the Southern Pacific system in Oakland and Berkeley was in competition with the electrified Key Route of the San Francisco, Oakland & San Jose Railway. The Key Route, later the Key System, began operating electric cars in the East Bay before the Southern Pacific's electric cars, on 26 October 1903. Key System trains ran on the lower deck of the Bay Bridge from 1939 to 1958. The Key System's electric cars stopped running in 1959.

West Alameda Yard

The West Alameda Yard for maintenance of the new electric cars was built on the site of the old Southern Pacific roundhouse on Alameda Point. The roundhouse was demolished in the first half of 1910 and the repair shop complex was completed in March 1911. The complex consisted of the main shop building, a blacksmith shop, a boiler house, the inspection foreman's office, three oil sumps, an oil tank, a water tank, and tracks, poles, and wires. By 1923 there was also a car wash platform, two stations - the West Alameda Stations of the Webster Street line and the Alameda Loop lines - and a formally laid out area for lawns and parking. In 1927, an extra storeroom was built and in 1929, a new lacquer building was proposed but never constructed. All of the engineering took place under the general direction of E.E. Calvin who was the vice president and General Manager of Southern Pacific Company. The cars and shops were designed and built by A.H. Babcock, electrical engineer for the Harriman Lines. Under Babcock was H.W. Clapp, assisted by P.B. Pendill.

Cars Repaired at Shops

The West Alameda Shops serviced the trains on the Oakland, Alameda, and Berkeley lines. The first shipment of cars arrived in West Oakland in February 1911. They were built by the American Car and Foundry Company and then shipped cross-country to be equipped at the Alameda shops. The first cars to be equipped were a motorized coach, a trailer coach, and a motorized baggage-coach, one of each basic type. As the first cars through the shop, they were numbered 300, 400, and 600 respectively. On 13 April 1911, after the completion of the Fruitvale Powerhouse, these three cars were used to test the system along the designated test section near High Street. From the Fruitvale Powerhouse, they ran up to the connecting link between the Lincoln and Encinal Avenue lines. After testing the cars and system thoroughly through April and May, the electric cars went into service 1 June 1911 with steam engines still running during peak use.

On 10 June 1911, the final shipment of cars arrived from the east. There were 125 cars in all, costing about $1,000,000. They were originally a dark olive green with bronze interiors and beige "headlining". They were 72 feet 10 ½ inches long and 10 feet 4 inches wide. The coaches seated 116 passengers while the combination baggage-coach cars seated 88 passengers with a 15 foot long baggage compartment.

After initial testing, the cars were considered excellent in design and construction. However, after one year of use, rumors of returning the cars to the manufacturer started to circulate. Wear due to regular use was substantial and maintenance costs were high. The cars had no heat for cold days and not enough ventilation to be comfortable on warm days. The cars were not returned to the manufacturer but they did receive a face lift in 1912. The interiors were redone in mahogany and the exterior was painted cherry red matching the Pacific Electric trains running in Los Angeles. Starting in May 1912, all the cars in the system were painted when they went in for maintenance at the West Alameda Shops.

The smaller, local service trains known as the dinkeys were also serviced at the West Alameda Shops. These trains were first built in 1912 and put into service in 1913. They were numbered in the 800 series. They were originally sent to the West Alameda Shops, but many were forwarded to the Pacific Electric lines in Southern California. Others were used for local service in Alameda and Oakland. Local service was discontinued in Alameda in 1923 (after the removal of the Harrison Street bridge) and in Oakland in 1928. From 1928 to 1930, the dinkeys were stored at the Alameda shops awaiting sale or scrap. In 1930, the Key System bought the dinkeys and rebuilt four of them for local service in Berkeley and Piedmont.

Up until the opening of the Bay Bridge to train traffic, Southern Pacific used ferries to carry passengers between the San Francisco Ferry Building and the Oakland and Alameda Moles. The Fruitvale, Harrison, and Webster street bridges carried trains over the Oakland estuary. By 1927, the Harrison and Webster street bridges were removed and the Posey Tube was under

construction. Rail traffic still operated on the Fruitvale Bridge but only bus and automobile traffic operated in the tube.

In 1939, the Bay Bridge was opened to rail traffic and Southern Pacific rerouted the two lines still operating in Alameda. To connect with San Francisco, the trains would start in West Alameda, travel eastward through town, cross the Fruitvale Bridge, and connect with the Seventh Street line to reach the Bay Bridge. At that time the operators of the Alameda Pier (South Pacific Coast Railway, a subsidiary of Southern Pacific) applied to the State Railroad Commission for permission to abandon the facility on the day rail traffic commenced using the bridge. Southern Pacific created the Interurban Electric Railroad Company (IER), a wholly owned subsidiary, to handle the operations across the Bay Bridge. The IER used the same red trains with new lettering on the side.

Decline of Electric Rail Transit in the East Bay

A combination of circumstances in the early 1900's resulted in the eventual decline of Southern Pacific's interurban and local service. In 1903 and 1906, the Interstate Commerce Commission had been strengthened and started to regulate railroad rates. Railroads, including Southern Pacific, had less control over operations and income. In 1914, with the outbreak of war in Europe, the U.S. economy slowed. Southern Pacific as a whole suffered a loss of business during the war and also from competition from ships with the opening of the Panama Canal in 1915. During the period of U.S. involvement in World War I, the government controlled the railroads, railroad labor wages were doubled, union membership surged, and some costly work rules were imposed. After the war, the railroad experienced a general decline in ridership and a gradual increase in labor costs. In 1922, Southern Pacific was hit by a major shopmen's strike. In the same year, the Supreme Court ruled that the acquisition of Central Pacific by Southern Pacific in 1885 was a violation of the Sherman Anti-trust act. The court ordered a severance of control.

Southern Pacific started cutting back on service in an attempt restrict costs and improve profits. In 1933, the Key System and Southern Pacific developed a plan to eliminate duplicate lines. The two systems remained independent but offered a non-competitive, intertwined transportation system through the East Bay and San Francisco.

When the Bay Bridge was opened to train use in 1939, the Alameda lines were operating at a loss. With trains on the bridge taking the place of ferries on the bay, the Alameda Mole was closed, which further isolated the Alameda lines.

Labor at the West Alameda Yard

Labor 1912-1917

Most railroad labor associations were founded in the 1870's as injury and death benefit societies. Train work was dangerous, wages were low, and no pensions or injury benefits were available. In the period of electrification Southern Pacific spent large sums on safety precautions. The fire sprinkler system and circuit breaker system in the Alameda Shops are representative examples of Southern Pacific's safety expenditures. Southern Pacific also ran regular stories on safety tips in the *Southern Pacific Bulletin* and offered awards to divisions with the lowest accident rates. Despite these precautions, 123 Southern Pacific employees died in work related accidents between 1909 and 1914. In response to conditions of low pay, high risk, and long hours the benefit societies quickly became full fledged economic trade unions.

The unions, also known as railroad brotherhoods, had few methods of improving working conditions. Most had conservative policies and preferred to use alternatives to striking. The Newlands Act (15 July 1913) created a system of arbitration and mediation through which the railroads could resolve labor disputes. There were two main problems with the system: there was no method of enforcing the way arbitration decisions were applied by the company managers, and conflicts between employees and management were only superficially smoothed over in order to maintain uninterrupted service. The real conflicts over working conditions and wages were not settled.

In 1916, railroad brotherhoods were pressing for an eight-hour workday without reduction in existing wages and with time-and-a-half for overtime. Workers were reacting to increased wages in other industries and to rising wartime prices. The railroads were willing to arbitrate but the brotherhoods had been dissatisfied with the results of past arbitration decisions and threatened to strike. Because of the predicted disastrous repercussions of a railroad strike during wartime, President Wilson recommended to congress the enactment of an eight-hour workday, but only for men engaged in train operation. President Wilson's recommendations were embodied in the Adamson Act passed 3 September 1916. The act specified that the eight-hour workday only applied to men engaged in actually running the trains and did not apply to shopmen, station masters, clerks, etc. This law left everyone disgruntled. Those excluded wanted a universal eight-hour day and those included were angry that the law did not increase wages sufficiently to meet the cost of living. Many men simply left the service of the railroads for higher paying positions in other industries.

World War I

On 26 December 1917, the railroads were placed under government control by proclamation of the President. In order to maintain the workforce, the Director General of the government's railroad operations, William G. McAdoo, established the Railroad Wage Commission, charged with studying the wage situation and making adjustments to match wages in other industries. He

also authorized General Order No. 8 instructing government appointed administrators to avoid discriminating against union members. On 30 April 1918, the commission submitted its report and recommended general wage increases as an emergency measure. It also recommended the permanent establishment of a wage tribunal to investigate and adjust inequalities. As a result, the Director General created the Board of Railroad Wages and Working Conditions. Other agencies, called boards of adjustment, were created to deal with other aspects of railroad labor issues. Railroad Board of Adjustment No. 2 was created on 31 May 1918 through agreement between the regional directors and the shopmen's organization. Thus, all disputes involving wage increases were handled by the Board of Railroad Wages and Working Conditions. All other disputes were filed with the appropriate board of adjustment.

During the period of government control, labor unions grew in numbers and strength. Although wages had been increased and, for many, workdays had been shortened, there was still unrest among workers. Shopmen were particularly unhappy with their arrangement. They were excluded from the mandated eight-hour workday, their wages had been adjusted but even so they felt their wages were not comparable to those of other industries, nor were they compensated for increased cost of living. They filed grievances with the Board of Railroad Wages and Working Conditions in January 1919 but it wasn't until July that the board reported to the Director General that it was deadlocked and that a decision could not be reached. The Director General recommended to the President that another commission be created to investigate and decide upon the question of wages in railroad service.

Due to the delay in settling the grievances as well as internal strife in some of the brotherhoods, several unsanctioned strikes occurred. In the summer of 1919, Southern Pacific yardmen in Los Angeles and San Francisco went on strike and most of the Western Division stopped working in sympathy. It was under these conditions of unrest that congress passed two bills — the Transportation Bill of 1919 returning the railroads to private administration, and the Transportation Act of 1920 which established the Railroad Labor Board.

The Shopmen's Strike of 1922

The Railroad Labor Board was organized on 16 April 1920. It was immediately pressured to deal with shopmen's wage demands, which had been postponed since January 1919. In July 1920, the board found that the scale of wages of railroad employees was substantially below those paid for similar work in other industries. Accordingly, they mandated a substantial increase in practically all classes. This wage increase was estimated to cost the railroad approximately $600,000 per year.

Shortly after this decision to increase wages was made, the country fell into a recession that lasted through 1922. Railroad management appealed to the Railroad Labor Board to readjust wages and working conditions to meet the needs of the carriers who were facing falling income and declining traffic volume. The board authorized a decrease in wages to commence on 1 July 1922 but employees were unwilling to accept the decision. Since 1917 there had been three

general increases and two general decreases in wages. The net change for shopmen was as follows:

Position	Wage in 1917	Wage in 1922
Machinists	$0.51	$0.70
Boilermakers	$0.54	$0.70
Blacksmiths	$0.51	$0.70
Sheet Metalists	$0.48	$0.70
Electricians	$0.48	$0.70
Molders	$0.48	$0.70
Helpers	$0.33	$0.48
Coach Carpenter	$0.39	$0.70
Fght Carpenters	$0.39	$0.63
Car Inspectors	$0.36	$0.63
Fght Car Repairs	$0.33	$0.63
Carmen Helper	0.30	$0.47
Apprentices	0.24	$0.395

Another problem shopmen faced was the threat of shop plants being contracted to outside workers. In the July 1922 edition of the *Southern Pacific Bulletin* the General Manager claimed that this was not an issue and tried to convince workers to vote against a strike. "There is no pending issue on the Southern Pacific in regard to contracting of shop plants to outsiders, in which particular, considering the facts, do not see how shopmen can do other than cast their vote against a strike on these lines."

However, between 1 July 1922 and 3 July 1922 the shopmen voted to strike. The federated shop crafts notified the Railroad Labor Board that a very large majority of their members "had left the service of the carriers". On 3 July 1922 the labor board resolved that remaining and new shop crafts employees must form an association, " to function in the representation of the workers to the U.S. Railroad Board".

Southern Pacific used this resolution to form a strike-breaking organization called the Shop Crafts Protective League. Employees who opted not to strike and new hires were forced to join the league and agree to the lower wages prescribed by the labor board. By September 1922, the Southern Pacific Company had managed to hire several thousand new shop employees. Despite these new hires they still had less than half of the full, pre-strike, work force. Despite attempts by management not to allow the strike to interrupt service they were extremely short handed.

In the September edition of the *Southern Pacific Bulletin*, William Sproule, the President of the Southern Pacific Company, wrote an article expressing the company view of the situation. "The daily additions to the shop forces give ample assurance that in the near future the company will have an ample supply of shop men and they will have their own organization on the system plan to deal with their own affairs on the basis of mutual good faith between the employer and the

employed on the Southern Pacific Company's Pacific System. It is the policy of this company and its management to deal with the men in the spirit of good faith and good will which we believe will be promoted by the new organization, as it clears the atmosphere for future good relations." The strike was not settled and the strikers lost their jobs.

1922-1941

The Railway Labor Act of 1926 addressed many of the issues raised by the strike of 1922. The bill incorporated aspects of earlier legislation including rules for mediation and arbitration to settle labor disputes. The act also specified some important aspects of labor rights. Among these were the workers' freedom to designate their own representatives to engage in negotiation with management and the right of workers to organize and bargain collectively. Carriers were specifically barred from forcing employees to join or not join any organization. Thus strike breaking organizations like the Shop Crafts Protective League were made illegal and workers could not be fired for joining or organizing unions.

The Railroad Retirement Act of 1934 was considered landmark legislation for labor. It was approved by President Franklin Roosevelt as part of the "New Deal" series of legislation on 27 June 1934. It created the Railroad Retirement Board to administer retirement and disability annuities to workers and lump sum payments to family members of deceased employees.

Working at the West Alameda Shops

Southern Pacific recruited laborers for the Alameda repair shops from a four-year apprentice school established in West Oakland in 1912 under master mechanic A.C. Hinckley. Boys ages 16 to 21 with at least a grade school education learned to become mechanics through a combination of classroom and hands-on activities. The young men were paid a small hourly wage from the beginning and received a raise every six months until, by the end of four years, they were making the wage of a full fledged artisan. Since the Oakland school was successful, Southern Pacific established similar apprentice schools in Sacramento, Dunsmuir, San Francisco, Roseville, Los Angeles, and Bakersfield, California; Sparks, Nevada; Ogden, Utah; Tucson, Arizona; and Beaverton, Brooklyn, and the Dalles, Oregon. Between 1912 and 1920, 422 men graduated from the Southern Pacific shop apprentice program.

Employees at the shops generally belonged to one of four main shop craft unions, the Brotherhood of Railroad Trainmen (BRT), the Railroad Yardmasters of America (RYA), the Brotherhood of Railway Carmen (BRCA), or the American Railway Union (ARU). The Brotherhood of Railroad Trainmen expanded in 1890 to include conductors, brakemen, roadmen, yardmen, dining car stewards, yardmasters, switchtenders, and baggagemen.

The BRT maintained a racial exclusion clause until 1957. The Railroad Yardmasters of America was established after government takeover of the Railroads during World War I. The first national convention of the RYA was held in December 1918. Membership was limited to, "any

male white person of good moral character actually employed as general yardmaster, assistant general yardmaster, yardmaster, assistant yardmaster, and station masters." Their main objectives were; 1) acquisition of the universal eight-hour work day, 2) two days of rest monthly, 3) an annual two-week vacation, 4) increased wages, and 5) improved working conditions. The Brotherhood of Railway Carmen (BRCA) of the United States and Canada included railway car repairers, inspectors, and oilers. This union was first established in 1888 when workers faced trying conditions including low wages, long hours, numerous work related accidents, and little job security. The American Railway Union (ARU) was meant to be an inclusive organization representing employees of the railroad carriers working in any capacity but the membership policy was exclusively for whites.

The unions remained exclusively white organizations until the late 1950s. Black workers were left with two main options, strike breaking or forming separate unions. The Colored Men's Locomotive Firemen's Association was founded in 1902 and the Railway Men's International Benevolent and Industrial Association was founded in 1915. The Brotherhood of Sleeping Car Porters was another such alternative union organized by Asa Philip Randolph in 1942.

From the national trends we can infer information about the working conditions in the West Alameda Shops. Workers were almost exclusively white men. The Alameda shops were most likely shut down by the shopmen's strikes of 1919 and 1922. Most of the shopmen probably lost their jobs during the strike of 1922 and an almost entirely new shop crew was hired that summer. As a result, service would have been slowed or less reliable for several months. The wages were low, even after the adjustments during World War I. The men worked a minimum of twelve hours a day, seven days per week until 1926 when the Railway Labor Act was passed. Workers did not receive retirement, death, or injury benefits from the company until 1934 when the Railroad Retirement Act was passed.

Impact of West Alameda Yard on City of Alameda

The West Alameda Yard and its associated rail lines had a variety of impacts on the City of Alameda. Some of these impacts were the result of developments begun by the earlier steam railroad lines, while some were new. Some of the impacts were subtle, while others were strong. These impacts are evident in relation to the history presented in the previous sections as well as in the sections below.

Alameda 1900-1910

Woody Minor described Alameda as it stood in 1902, a few years before development of the West Alameda Yard was begun:

> ...a town of some 16,000 inhabitants. The island appears pastoral to our urban eyes. A fairly solid district of houses spreads westward from a thriving Park Street into the heart of the island. The East and West End are largely

> undeveloped: A clustering of factories and an oil refinery on the west shore, a village and several streets of houses amid the trees of the East End. The Gold Coast has a scattering of houses among the oak groves, with a string of mansions along the shore. Houseboats instead of shipyards cling to the shoreline of the Estuary. Railroad tracks run down Encinal, Central, and Lincoln Avenue; a trestle crosses San Leandro Bay. (24 April 1987).

By 1902, streets had been paved, sewage lines installed, the channel had been dredged, boat traffic and associated water pollution were increasing. Alameda had been significantly changed since its early days. The peninsula had become an island through the dredging of a channel through San Antonio Creek to San Leandro Bay. Densely inhabited and productive marshland was destroyed in the process. Paved streets reduced the water-permeable land area creating storm water runoff and reducing the amount of rain water that could become ground water. Sewage lines dumped raw sewage into the estuary. Boat activity increased in the harbor and along the estuary due to the freshly dredged channel. Shipbuilding industries, a tannery, an oil refinery, and other industries developed along the water. Boating and industrial activity lead to increased water pollution. This reduced the species diversity and population size of fish and other wildlife in the harbor, channel, and nearby bay waters. The early railways had paved the way for the growth of the city.

Electric Railroads in Alameda

In the context of what had already occurred, the impact of the electrification of the suburban rail service was primarily to continue changes already associated with the earlier railroads. The principal impacts were in providing employment and in speeding up the growth of population. New impacts were relatively minor. Overhead trolley wires were strung, changing the look of Encinal, Lincoln, and Fernside avenues. The trains were quieter than the steam engines and did not belch smoke or rattle windows as they went by. More marshland was filled on the west end.

Southern Pacific's electric train service in Alameda began on 1 June 1911. At that point the railroad closed the numerous local stations previously built up and down the lines and started selling tickets on the trains.

The Alameda City Council made many complaints to the State Railroad Commission about Southern Pacific service in the city. In 1911, Southern Pacific tried to restructure ticket pricing by doubling intracity fares from 2.5 cents to 5 cents. Citizens and the city council together made a big enough fuss to make Southern Pacific keep the low intracity fare. In 1933, the city council filed a brief with the commission complaining that the Alameda trains reached the pier after the Dutton Avenue train making it difficult for Alamedans to find a seat on the ferry. They were outraged that Alameda citizens had to stand on the entire ferry trip to San Francisco.

Although some of the complaints were trivial others were not. For example, train service in Alameda was severely affected by the opening of the Bay Bridge. Alameda's geographic

isolation from the rest of the Bay Area made convenient access to the Bay Bridge a difficult matter. The City of Alameda favored a connection via the Webster Street bridge. This required the construction of a new high level railroad bridge or some other structure that could handle the traffic of the large and heavy interurbans. Southern Pacific was already running the Alameda lines at a loss and therefore chose a less expensive alternative. They reversed the directions of travel on the Alameda lines and crossed the estuary at the Fruitvale bridge, then used the Seventh Street line to reach the Bay Bridge.

The city was furious and filed briefs with the State Railroad Commission and the Interstate Commerce Commission. Both agencies approved the route changes. The Mayor of Alameda, James Eschen, then applied for state funds to construct a bridge at the Webster Street crossing. Since funds were not forthcoming the city finally refused to renew Southern Pacific's franchise for the Encinal and Lincoln avenue lines in 1938. In place of a franchise, the city granted a revocable license, hoping the threat of revocation would help maintain high quality service.

lnstead, on 30 November 1938, Southern Pacific sold its suburban lines to the Interurban Electric Railway Company, a Southern Pacific subsidiary. The IER operated local trains to the Alameda Pier from 1 December 1938 to 15 January 1939. The ferries between Alameda and San Francisco stopped running. Alameda became more isolated from San Francisco. Between 1939 and 1941 the IER trains ran more and more infrequently. Abandonment of service was finally approved by the State Railroad Commission on 26 August 1940. On 9 November of the same year the ICC concurred with the Commission's ruling. The following summer service ended all together. Alamedans could commute to San Francisco by car or by bus. Ferry and interurban train service were no longer available.

The decline of the suburban railroad system was a decline in the public transportation system of Alameda. The bus system was not as complete as the initial rail system and commuters became more dependent on their own cars. People without cars were entirely dependent on buses to get to San Francisco.

United Engineering Company Shipyard

1941-1946

ln 1941, the United Engineering Company purchased the Southern Pacific Company's Alameda plant and adjacent waterfront property. The United Engineering Company was an extension of two previously existing firms, the private shipbuilding business of Harry P. Gray, J. R. Christy, and Samuel Eva, established in 1897, which was succeeded by United Engineering Works, the firm of Harry P. Gray and J.R. Christy. United Engineering Works was established in San Francisco along the waterfront at Spear Street south of Market Street. It flourished during the Klondike Gold Rush of the 1890's producing mining equipment as well as marine engines. In 1900 the company purchased marshland east of Webster Street along the Oakland estuary and

began building a shipyard that was constructed in increments over the next fifteen years. In 1901 the company leased land east of the Harrison Street bridge to John Dickie, a ship builder who specialized in wooden vessels and built ferries for the Key System. The United Engineering Works Alameda plant was taken over by Union Iron Works, which was owned by Bethlehem Steel in 1916. Harry Gray returned to San Francisco and founded the United Engineering Company about 1917 after purchasing Risdon Iron Works and the T.J. Moynihan and Company. The United Engineering Company Ltd. was incorporated in California on 4 October 1927.

At the time that the United Engineering Company bought the present site in 1941, it covered about 35 acres including land leased from the city. The main shop building was used as a plate shop in the north bay, a machine shop in the central bay, and a joiner's shop, electrical shop, mold loft and storage areas in the south bay. The second floor where the Southern Pacific offices had been, was converted to the engineering department. United Engineering transported a large portion of building materials by rail and utilized some of the Southern Pacific tracks for this purpose. The improvements to facilities required at the newly acquired plant involved a substantial expansion and required government funding as well as private loans to undertake. United Engineering received private loans from Wells Fargo Bank and the Union Trust Company amounting to $1,745,358.

At that time, the company was managed by Robert Christy (son of J.R. Christy), President; Robert Macdonald, Vice President; Sidney Fraser (son-in-law of the late Harry Gray and an engineer with the Standard Oil Company), Treasurer; and D. B. Maturen, Secretary. D.B. Gray (possibly the son of Harry Gray), formerly president of United Engineering, died in 1941. All of the stock was held privately by Robert Christy and the estate of Harry Gray. Some of the company's customers included American President Lines, American-Hawaiian Steamship Company, and Western Pipe and Steel Company. Shipbuilding operations were supervised by George Sutherland, previously employed by the Los Angeles Shipbuilding and Drydock Corporation.

In August of 1941, United Engineering received its first contract for work at the Alameda plant. The government requested four tug boats at a total cost of $5,465,372. United Engineering needed to make improvements to the site in order to fill the contract. Improvements costing $350,000 were funded by the Navy Bureau of Ships, and improvements costing $134,500 were financed by United Engineering. The Government funded expansion included two additional building ways, a wharf, dredging, a whirley crane, two yard cranes, a compressor, two punches, a hydraulic press, and a plate planer. United Engineering financed the purchase and construction of additional real estate, yard surfacing, additional trackage, service lines and lighting, relocation of the existing plate and boiler shop, plate racks, plate shop cranes, bending equipment and furnace, additional riveting, burning and welding equipment, additional pipe equipment, and tools. It also built and equipped offices and a drafting room. The facilities financed by the government were considered 100% owned by the government and rented by United Engineering at a "reasonable rental" charge. The funds were approved by congress in the Naval Appropriation Act of 1942, approved 6 May 1941.

In December 1941, United Engineering requested $1.5 million for more plant improvements including piers (requiring dredging and cranes), warehouse buildings, paving and steel storage racks, electric distribution lines, lighting, an air compressor (for shops), a steam boiler, machine tools, and portable equipment. In January 1942, the Navy approved the request and United Engineering contracted with the American Dredging Company to conduct the dredging and construction of the new piers, levees, spillway, culverts, and drainage ditches. They also placed new rip rap to stabilize the shoreline.

In June 1942, United Engineering proposed the addition of a 12,000 ton wooden drydock to be furnished by the government at an estimated cost of $1.6 million with a contingency budget of $150,000. The construction of related structures was estimated at a cost of $418,000, also to be government funded, but to be installed by United Engineering. This project was approved by the Bureau of Ships on 8 January 1943.

On 20 December 1942, United Engineering wrote to the Bureau of Ships requesting funding for yet another facility improvement project. This time they wanted to build a two-story building, approximately 60 by 200 feet to be used as women's quarters and a sheet metal shop on the ground floor, with the engineering department on the second floor (previously located on the second floor of the main shop building). The cost of this project was estimated at $96,000. The space in the main shop building vacated by the engineering department became the new accounting office. The previous sheet metal shop was converted to shops for marine machinists and rigging. In the same proposal United Engineering requested the construction of a warehouse extension ($50,000), a drydock service building ($20,000), the extension of piers and the bulkhead wharf ($70,000), plus necessary machinery and tools ($15,000). United Engineering also proposed to fill the extreme western corner of the yard which was actually owned by the Naval Air Station but occupied under lease by United Engineering. They claimed this corner was unusable due to low ground level and lack of crane tracks.

United Engineering continued improving the Alameda facility throughout its tenure. In November 1943, United Engineering reviewed all the improvements completed with government funding. At that point the shipbuilding facilities included two shipbuilding ways, an outfitting wharf extension, a whirley crane, a yard and locomotive crane, and a variety of machine equipment. The total spent on these facilities was $350,000. The ship repair facilities included piers, $323,439 worth of buildings, utilities, and machinery. The total spent on repair facilities was $2,232,000. At that point the yard buildings consisted of a warehouse, a boiler shed, a washroom and locker building, a paint shop, an office building, a pipe shop, a sheet metal and electric shop, a hospital building, a drydock control house, a drafting room and new sheet metal shop, a dry dock service building, and a Navy inspector's office. In the yard, United Engineering had relocated old tracks and built new tracks, added fencing, graded and paved the western corner, supplied city water, and paved the pier approaches. The site had gone from an electric train repair shop with facilities for a limited range of repetitive tasks to a shipbuilding and repair plant with extensive facilities for a complex range of functions in only two years. In 1944, United Engineering added a 14,000 ton "YFD" floating drydock just east of its waterfront

property. To accommodate this expansion, an additional 16 feet of waterfront property was donated by the Navy's Aeronautics Department to the Bureau of Ships and then released by the War Department to be incorporated into the United Engineering plant as the site of the proposed dock.

The expansion of repair facilities culminated in the complete conversion of the United Engineering facility from a combination shipbuilding and repair yard to a repair yard. This conversion was announced in a letter from United Engineering to the Bureau of Ships, Navy Department on 17 August 1944 although it had been previously discussed and the conversion was already underway. On 20 August 1944, United Engineering proposed to buy the government facilities at the Alameda plant for a total cost of $9,753,087. The Navy refused to sell and maintained its ownership in the Alameda yard until 1970 when it eventually sold the property to Todd Shipyards, the tenant at the time.

By the end of the war, United Engineering had repaired hundreds of ships and built 21 steel-hulled tugboats for the Navy at the Alameda Yard. In June 1946, United Engineering was purchased by Matson Navigation Company and became a wholly owned subsidiary responsible for maintaining Matson's fleet.

Matson Navigation Company

Captain William Matson purchased his first sailing ship, the *Emma Claudina*, in 1882. He was one quarter owner, with Adolph Spreckels, Joseph Knowland, Otis Preston, John McKinnon, Charles Watson, and Peter Smith each owning one eighth interest and providing financial support. The *Emma Claudina* transported goods and equipment between San Francisco and Hili Bay, Hawaii. Matson's main clients were the Waiakea Mill and Hilo Sugar Company. In 1887, Matson purchased the *Lurline*, the most famous of the Matson vessels.

Matson Navigation Company was incorporated in California 9 February 1901. In July 1901, Matson purchased its first steamer, the *Ehrenfels*. After much restoration and the conversion to an oil burning steam engine, the *Ehrenfels* was renamed the *Enterprise*. The *Enterprise* was the first oil burning steamer on the Pacific.

The Matson Navigation Company continued cargo and shipping service between San Francisco and Hawaii throughout World War I. After the war, Matson experienced its largest expansion ever. Between 1919 and 1930, Matson built a 16-story office building and the Port Accessories building across from Pier 32 in San Francisco, it purchased two large freighters and three luxury liners and bought out The Oceanic Steamship Company. Matson also established freight service to Australia and New Zealand.

During World War II, passenger traffic boomed as workmen, service men, government personnel, and their families traveled to and from Hawaii. Matson's fleet was heavily used during the War and by 1946 the whole fleet was worn out. At the same time, the shipping

industry was facing its most difficult period of decline. Matson purchased United Engineering Company to be its repair and maintenance division thus getting repair work at "no profit" rates. They chose to repair the *Lurline* and the *Monterey* at the Alameda yard. In 1948 Matson leased the Alameda shipyard to Todd Shipyards Corporation.

Todd Shipyards Corporation

Todd Shipyards Corporation was established by William H. Todd on 14 June 1916. Todd had been President of the Clyde Steamship Company since 1909. In 1915, he bought the Clyde Steamship Company from the Clyde family. Within a year, Todd paid off the purchase loan and expanded the organization to include the Todd Shipyards Corporation. At that point, Todd Shipyards Corporation consisted of the Robins yard in Brooklyn, the Tietjen and Lang Company in Hoboken, and the Seattle yard on the west coast. During World War I, Todd expanded its facilities, building a new yard in Tacoma, Washington. William Todd initiated the Products Division of the Corporation by purchasing the White Fuel Engineering Company in September 1916.

After World War I, shipyard activity saw a significant decline. Todd tried to reorganize and diversify its efforts. The company closed the Tacoma yard and opened new yards in Mobile and New Orleans, expanding its services into the Gulf of Mexico region. The corporation also established Todd Oil Burners in London. At the same time, Todd shrank its workforce from 17,000 at the end of the war to about 2,000 during the Depression. William Todd died on 15 May 1932 and John Reilly was elected his successor as President of Todd Shipyards. Reilly had close ties with the oil industry and believed that a shipyard in Texas would be profitable. In 1934 he opened the Galveston Division with a shipyard at Pelican Island.

Todd hit another period of expansion after the Merchant Marine Act of 1936. This act was designed to reinvigorate the shipping industry and Todd was able to reopen the Tacoma yard in 1939. World War II rapidly increased the demand for ships and Todd responded by adding shipyards in Maine and California. By 1944, Todd had created a total of ten new shipyards in Maine, New Jersey, California, Oregon, and Texas. They had constructed 999 ocean ships and repaired or converted 22,457 ships. At the peak of production Todd employed 157,000 workers.

Although the shipbuilding industry saw a major decline after 1946, Todd was kept afloat with the demands of the Korean and the Viet Nam wars. It also expanded its peacetime activities by purchasing subsidiaries such as Lester Engineering Company and by expanding its product division.

Todd Shipyards Corporation is an international conglomerate with a wide variety of subsidiaries and holdings not limited to the repair and construction of ships. For example, Lester Engineering Company is a producer of plastic injection molding machines and die-casting machines. The products division of Todd handles selling and service of oil and gas burner products as well as insecticidal equipment and chemical fog applicators.

The Alameda Shipyard of the Todd Shipyards Corporation

In February 1948, the Matson-owned United Engineering Company leased the Alameda Yard to Todd Shipyards Corporation under a ten-year contract. After the war the shipbuilding industry collapsed. Two Alameda shipyards, General Engineering Drydock and Bethlehem Alameda Shipyard, closed after 1948. Pacheco, another Alameda shipyard, grew into a manufacturer of steel machinery. Todd was the only remaining shipyard exclusively devoted to ship repair in Alameda County. However, the Navy did maintain a small shipyard on the north shore of Alameda, east of the Todd site which it periodically tried to lease to different companies, and used for minor repairs to its ships (Minor, maritime history 13).

In the 1950's, ship repair work increased with the war in Korea. In the summer of 1950, Todd's Alameda Yard quickly repaired four vessels for supply transport. The first two, the *Alamo* and the *Brainard*, arrived 12 July 1950. A seven day deadline was set to make the vessels seaworthy. Although that deadline was met, labor disputes made subsequent jobs more difficult. In December 1950, the Alameda Yard was hit with a strike by Carpenter's Local 1149, an American Federation of Labor affiliated union. The carpenters requested a raise of 19 cents per hour but Todd refused. The Navy pleaded for carpenters to return to work to finish repairs on the Navy transport *Thomas Jefferson* and the tanker *Marius*, vessels badly needed for the Korea War effort. Carpenters returned to work but only briefly. After the emergency repairs were complete the carpenters resumed their strike leaving other Navy work incomplete. There were two main points of contention. In a dispute over who was to represent the workers in negotiations, the company argued that the Pacific Coast Metals Trade Council was the appropriate representative while the workers were using the AFL. In addition, the workers requested a 19 cent raise and tool benefits, making the proposed wage $2 per hour if workers furnished their own tools and $1.93 per hour if Todd provided company tools. Todd refused the raise and the tools.

In the meantime, the machinists called a strike in January 1951 due to a long standing disagreement with the Navy over crew members doing machine work. The machinists had also requested a 19 cents per hour raise and been refused along with the carpenters. In February 1951, the carpenters and machinists returned to work when the company agreed to provide tools, pay wages of $1.93 per hour, and hold elections to determine the organization to represent workers in disputes. During the dispute, the Alameda yard was shut down and the Navy diverted contracts meant for Todd to other local shipyards.

By summer 1951, Todd's Alameda yard was back in full swing with several Navy contracts awarded. A supportive article appeared in the local paper lauding Todd's Alameda Yard as one of the community's major employers.

In November 1952, the Alameda shipyard was the first location in the United States to use a new technology to discover flaws in the welded stress seams of vessels. The procedure was conducted by the X-Ray Engineering Company of Mill Valley. After dry-docking and

sandblasting the hull, the procedure could begin. X-Ray film was taped to the seams on the outside of the hull, and the top surface of the deck. Then the "radioactive pill", a product of the Atomic Energy Commission, which released radiation, was removed from its lead container and suspended a certain distance from the plate to be tested on the opposite side of the film. After the film was developed, any defect in the weld was revealed by a dark spot on the film where the radiation penetrated the hull more easily. Standard Oil was the first company to use the method to check its ships.

In January 1955, the machinists went on strike again. The dispute was over alleged violations of the union seniority clause. The plant was completely shut down because 1500 workers respected the picket lines. Eight ships were tied up in the yard for repair and Todd filed suit against the union for $25,000 in damages. The strike lasted from 18 January through 31 January when the strikers returned to work while the union representatives and Todd management met with federal mediators.

In 1956 and 1957 the Alameda yard was plagued with accidents. On 9 May 1956 an explosion on an oil tanker left one man dead and seven injured. The tanker was the *SS Syosset* which belonged to General Petroleum and was in for repairs. The company fire and police departments handled the flash fire that followed the explosion while the company ambulance carried the injured to Providence Hospital. According to the *Alameda Times Star*, local police and fire departments were not informed of the blast until reporters called asking for details. On 3 August 1956 a fire swept a storage room aboard the *USS Windham Bay*, an escort carrier in for repairs. On 20 September 1956, a worker drowned when he fell off a barge at the shipyard.

The worst accident occurred on 29 January 1957 when the Alameda yard was racked by two explosions killing ten workers and injuring forty-four. The *Alameda Times Star* reported the tanker explosion as "Alameda's worst industrial disaster in the city's history." The explosion occurred on the *SS Jeanny*, a T-2 type tanker built during World War II. The blast was investigated by city, state, and federal officials. The city fire department reported on 1 February 1957 that, "if local fire safety regulations and inspections had been carried out and adhered to the explosions and fire aboard the *SS Jeanny* at Todd Shipyard never would have occurred." The first explosion occurred in the fuel bunker splitting the tank. A welder using electrical arc welding techniques was working on the deck above the fuel tanks. Some molten metal probably dripped through a hole in the tank that had been left open and ignited the vapors in the receptacle. The fuel bunker split and scattered fuel all over the engine room. The heat of the room, the fuel, and petroleum-based preservatives used in the engine room created a volatile situation that resulted in the second explosion. In the end, Todd Shipyard was found guilty of "accidental death by negligence" but was not assessed blame for the negligence charge.

In 1959, the Todd Shipyards Corporation purchased the Alameda yard from Matson Navigation Company. In the 1960s, ideas about the environment began to change. New government regulations on pollution came into effect and public awareness of environmental issues was heightened. Any expansion of facilities at the shipyard required a new set of permits and

certifications from newly established government agencies such as the San Francisco Bay Conservation and Development Commission and the Regional Water Quality Control Board. Todd was found guilty of pollution in the Oakland Estuary in 1961. Oil leaking from a damaged ship in drydock created thousands of dollars worth of damage to small boats in the nearby harbor and caused a fire hazard in Jack London Square. The Coast Guard reported that a tar-like fuel oil covered the estuary for 25,000 feet with an inch-thick layer near the Showboat Restaurant. Todd's attorney stated that the conviction would hurt the local economy. "Todd Shipyards can't bring ships in for repair if they are going to get slapped with a criminal complaint for doing the job." The Todd Shipyards Corporation found itself faced with fines as government agencies started to enforce new environmental standards.

In 1968-69, Todd upgraded its pier and drydock facilities to handle larger ships. Todd was involved in increasing the carrying capacity of tankers by as much as 50%. Todd's Alameda shipyard also got involved in the space program. Todd built two ships that simulated a space craft, called the *Starflyer II* and *III*. These ships were used to simulate space travel through specially constructed, hydraulically activated equipment, sound track, and film. The ships were on display at the Cotton Bowl State Fair Park in Dallas, and later at Palisades Amusement Park in New Jersey.

Todd employed 2,500 workers in 1970 during the height of the Viet Nam War. Around that time, the Navy sold out its interest in the yard equipment. After 1975, only 300 workers were employed at the Alameda yard. It was actively used until 1981. Shortly thereafter it was sold to Alameda Gateway.

Alameda Gateway Limited

Alameda Gateway is a limited partnership based in Alameda. John Beery is the managing partner. The company acquired the site in 1983. In 1985, Alameda Gateway sought to develop the property into a marina to house various private and industrial facilities. The proposal was denied a permit by the Army Corps of Engineers because the area was slated for a Port of Oakland improvement project. In 2001, the largest tenant is Bay Ship & Yacht, a ship repair company. Other large tenants are Marine Express, Seaway Trucking, the Technical Services Group, and Rosenblum Cellars. In addition to these, there are 40 smaller tenants, primarily engaged in marine and industrial work.

Labor in the Shipyard

Unions

The shipyard workers were associated with several labor unions with large nationwide memberships. The principal unions active in the United Engineering-Todd Shipyards included the Industrial Union of Marine and Shipbuilding Workers (IUMSWA), organized in 1932. Membership in this union reached 100,000 in 1940 and jumped to 250,000 in 40 locals during

World War II. The International Brotherhood of Boilermakers, Iron Ship Builders, Blacksmiths, Forgers and Helpers started as two separate unions that merged in 1893. Membership increased during World War II and was up to 500,000 in 1951. However, with the decline of the shipbuilding industry after the war membership again waned and was as low as 150,000 by 1955. The International Brotherhood of Electrical Workers (IBEW) was chartered in 1891. Despite competition from the United Electrical, Radio, and Machine Workers of America, the union grew during World War II and was up to a membership of 360,000 in 1945. The United Brotherhood of Carpenters and Joiners (UBC&JofA) had its roots in the Carpenter's Company of Philadelphia, which was organized in 1724. By 1955, the carpenters union represented 800,000 workers.

On 12 January 1942, President Roosevelt created the National War Labor Board (WLB) by executive order. All strikes and lockouts were banned and the board had jurisdiction over all labor disputes. One of the WLB policies established in 1943 was a halt in pay raises. Employees could be promoted to positions with higher rates of pay and merit increases, or bonuses could be approved, but general pay raises were halted. In response, labor-strapped industry attracted workers by offering fringe benefits such as paid holidays, health benefits, and retirement plans.

During the war, union membership greatly increased. The number of female and non-white workers in all sectors of industry also increased dramatically. However, unions maintained discriminatory membership clauses in many cases. The Boilermakers and Machinists locals prohibited or placed restrictions on black membership, severely limiting access to skilled positions in the Bay Area war industries. In 1942, the Boilermakers formed an auxiliary division for the Bay Area's black shipyard workers. In the segregated auxiliary, blacks paid dues but were denied equal voting power in elections and policy decisions. The Machinists Union maintained a strict whites-only membership clause. The Richmond local stated as late as 1944 that, "if they were forced to take negroes into the union, or to clear or refer them, the men would walk out of the plants and that they as union officials would turn in their badges and go out with the men." (Lemke-Santangelo, 121)

Although women were generally admitted to unions they also faced employment discrimination. Women rarely, if ever, were promoted to high paid, skilled positions or managerial status. Lynn Childs was the only woman to become a burner at Moore Shipyard in San Francisco (Field).

After the war, unions faced a difficult period. Post-war layoffs led to a series of strikes. The Taft Hartley Act was passed in 1947. This legislation restricted unions by spelling out actions considered to be unfair labor practices. The act forbade unions to refuse collective bargaining, outlawed the closed shop, and certain kinds of boycotts and strikes.

Women in the Shipyard

While little is known specifically about women workers at the United Engineering Company Shipyard, much has been written about women shipyard workers in the East Bay. The first women were hired in East Bay shipyards in the summer of 1942, and many were hired by the end of the year. Money was requested to build facilities for 300 women workers at the United Engineering Company Shipyard in December 1942 (See report on Building No. 18). According to Marilyn Johnson's *The Second Gold Rush*, 27% of workers at the Kaiser shipyards were women, and 20% of the workers at the Moore shipyard in Alameda were women.

Most women who took jobs in the war industry in the East Bay and elsewhere were working women before the war. They were often the sole supporters of themselves and their children. Some were widowed, others were single mothers. Many women of color and working class women who were married had to work to make ends meet. Some worked in factories making toys, clothing, and other consumer goods. The work was generally poorly paid and paid by the piece with no overtime or other benefits. Other women had been domestic workers. They worked in homes caring for children, cooking, and cleaning. Some were live-in domestic servants with a single family while others worked for different families on different days doing menial tasks. The work was often lonely and poorly paid. Another major area of work for women before the war was in the restaurant and hotel industries. Women worked as servers in restaurants and cafeterias and as chamber maids in hotels. This work was also poorly paid with no benefits.

In the early part of the war, employers hired white males over local women and people of color. By the fall of 1942, the war department launched an ad campaign encouraging women to work in the war industry, in response to the severe labor shortage.

The ads compared industrial jobs to traditional women's house work. They compared cutting out dress patterns to stamping out airplane parts, and compared filing fingernails to filing steel parts for ships. The reasons for women to come to work listed in the ads included supporting one's husband while he was overseas, general patriotism, and having something to do while sons and husbands were away. They rarely if ever mentioned financial need as a reason.

But that was the main reason women did go into shipbuilding and other industries. The pay was many times better than the work they did previously and they had themselves and families to support. Doing industrial work, women often made more in one day than they had in a whole week in jobs previously open to women. Industrial jobs carried with them Social Security benefits, a privilege not afforded domestic, restaurant, or agricultural work. Most women intended to keep their jobs permanently.

Women were making more then ever before but they were still being paid less than male counterparts. Women were generally barred from unions. They were often making 80% less than men doing the same job. In some factories black women were paid 5 to 10 cents per hour

less than white women. Supervisors and managers were, for the most part, white men. Women faced sexual harassment and racial discrimination on the job.

In 1942, women in San Francisco forced the Boilermaker's Union to allow women to join. This led to the opening of other unions. The opening of unions to women was an important step toward equality in the workplace. Women's wages were immediately increased 80 to 100%. In addition, unions provided recourse for dangerous working conditions and gained overtime pay.

By 1943, the work environment was quite diverse in terms of race, age, and geographic region of origin. Along with these changes, there were instances of racial tension. In some factories black women couldn't use the shower facilities. Sometimes white women would refuse to work with black women. At the same time, many cross cultural relationships were formed. People working together in factories and living together in projects often formed tight-knit communities.

Most women still had to do housework and care for children when they got home from the factory. Some childcare was available at factories or in projects. Household duties took up the free time of working women. This made participating in union activities and working overtime next to impossible for women with families. Generally, the extra strain of domestic work was not acknowledged by factories or unions. There was intense pressure not to take days off and to work many hours of overtime. Adding insult to injury, one wartime propaganda film blamed women for a slight fall in production. The film claimed women were not used to long hours of hard work.

When victory seemed imminent, propaganda films changed their focus. Instead of encouraging women to work in war related industry, the films encouraged women to stop working upon the end of the war. The government was concerned about finding jobs for returning veterans. Women were laid off first, followed by less senior black men. Eventually, as industry slowed, many white men were laid off as well.

The common belief of the day was that women would not experience unemployment hardships because they would simply "go back" to being housewives. Widows, single mothers, lesbians, and other unmarried women were overlooked in this scenario. Although many women did become housewives after the war, the women who had to support themselves and their families still had to work. These women went back to poorly paid service positions with no benefits. Skilled craftswomen took less interesting, demeaning work, that did not utilize their skills.

Impacts of the Shipyards on Alameda

Background

Early Shipbuilding in Alameda

Alameda has a long history of shipbuilding along the estuary. The development of a shipbuilding industry was facilitated by the dredging of a navigable channel from San Francisco Bay through San Antonio Creek to San Leandro Bay beginning in 1874. By 1887, deep sea vessels were anchoring on the Alameda side of the estuary. Shipyards were established along the estuary in Alameda by Hay and Wright in 1898, United Engineering Works in 1900, Dickie Brothers in 1901, and Barnes and Tibbetts in 1914. On the Oakland side of the estuary, where development was inhibited for political reasons, William A. Boole started a shipyard in 1900 and Moore and Scott Iron Works moved its shipyard from San Francisco in 1906

Among the Alameda shipyards, the United Engineering Works played a conspicuous role. Established in San Francisco in 1906, United Engineering Works began repairing marine machinery and evolved into a successful shipyard where many steel-hulled vessels were built. In the general buildup of industry and shipbuilding associated with World War I, United Engineering Works was sold to the Union Iron Works of San Francisco, which was owned by the Bethlehem Steel Corporation, in 1916.

United Engineering Works was also associated with the Dickie Shipyard as its landlord. In 1901, United Engineering Works leased part of its Alameda property — a site east of the Harrison Street Bridge — to John W. Dickie, one of three Dickie brothers who were prominent in the shipbuilding business. This shipyard closed in 1907.

After World War I, the Bay Area shipbuilding industry declined in the 1920s. In the 1940s, shipbuilding increased again in association with the buildup for World War II. At the beginning of the war, two dormant shipyards in Alameda were revived — the Bethlehem Shipyard and the General Engineering and Dry Dock Shipyard. In addition, four new shipyards were opened in Alameda in 1940-1941: the United Engineering Company, Pacific Bridge Company, Pacific Coast Engineering Company, and W.F. Stone and Son shipyards.

These six yards were productive members of a concentration of more than a dozen shipyards in the Bay Area. Tens of thousands of workers produced hundreds of ships and repaired thousands more.

After the war, the ship construction and repair industry declined. An enormous surplus of ships had been created during the war. Bethlehem and General Engineering were the first Alameda shipyards to shut down — both yards ceased operation in Alameda in 1948. Paceco, previously known as the Pacific Coast Engineering Company, diversified its operations, moving into the manufacture of steel equipment and machinery.

United Engineering was purchased by Matson Navigation. The Alameda yard was leased to Todd Shipyards Corporation in 1948. Todd continued to repair ships at the Alameda yard until the early 1980s.

World War II Shipbuilding in Alameda

World War 1I had a major impact on Alameda leading to an immense population increase, the first federal housing projects, and the conversion of thousands of acres of marshland and farmland to industrial and residential uses. The impact of the shipyard was a part of the impact of the war.

Population Increase

During World War 1I, Alameda's population increased from about 36,000 in 1939 to about 90,000 in 1945. The new residents were Naval Air Station personnel, civilian workers in the shipbuilding yards and other industries, and their families. The needs of this immense new population for housing, schools, health, and recreation consumed the city's attention for the duration of the war.

School enrollment nearly doubled. Several housing projects built temporary schools for their residents. Most schools operated double sessions. The city's health department and counseling services were hard pressed to handle the new load while maintaining adequate levels of service. The recreation department received federal recreation funds and created two new parks, Krusi and Godfrey parks.

Housing

In order to handle the influx of people, the city council resolved to create the Alameda Housing Authority (AHA) on 8 August 1940. Its purpose was to provide housing for Alameda's civilian defense workers. After the creation of the Federal Public Housing Authority (FPHA) in 1942, the AHA administered the FPHA grants.

The Public Housing projects were mostly located in the west end with one located on the north side along the estuary. The projects were named Chipman, Encinal, Estuary, Pacific, Webster, Woodstock, and the Atlantic Trailer Park. They comprised about 5,000 units and housed about 20,000 people (Minor, 8-11 March 1991). Apartments in the Alameda projects were furnished, which was of great assistance to migrants who often came with almost nothing.

The private sector tried to address the housing crisis as well. Private contractors built several hundred units of new housing in the form of single family dwellings, duplexes, and apartment complexes. Hundreds of single family residences were converted to multiple units. In addition, many families took in boarders (Minor, 10-13 May 1991).

Demographics of the Population

Not only did the population increase during the war, but the percentage of people of color and women increased. In 1939, Alameda estimated its non-white population at 1000, about 1 in 36 or about 3% of the population (*Alameda City Directory*, 1939). The black population was only about 250 residents or 0.7% of the entire population (Minor, 25-27 June 1991). By 1950, the population stabilized at about 64,500. The black population was around 5,300 or about 8%. About 25% of the AHA housing units were occupied by black families.

The labor migration during World War II was unusual in its dominance by women. For every 100 women who came to the Bay Area for wartime work, only 94 men came along. By 1944, migrant women made up 46% of Bay Area working women and 27% of the entire working population. Chinese-American workers of California were also employed in large numbers after facing years of employment discrimination.

The United Engineering Company and its Impact on Alameda

Population and Housing

The United Engineering Alameda yard provided work for about 2,000 employees at the height of the war, many of whom lived with their families in the nearby Estuary Project. The Estuary Project was the largest of Alameda's wartime housing projects. It cost $2.5 million to build and was completed in 1944. The 70-acre site held 171 buildings with 1,368 living units. The site was on Main Street adjoining the United Engineering yard and the estuary. The site plan was similar to other government projects of the period. It was a rectangular site with curving streets around a central common. Buildings were grouped primarily around the edges with half the central common also covered by housing (Minor, 26-29 April 1991).

The Estuary Project created an environment that was diverse racially and ethnically. The Estuary Project's population included Asian, Pacific Islander, Latino, African American, and European American residents.

The environment in the Estuary Project was insular. The apartments were adjacent to the United Engineering Yard and the Naval Air Station – most residents walked to work. Children living at the Estuary Project attended John Muir school located within the project's boundaries. The Bethel Baptist Church was located in the Estuary Project and offered a summer Bible school which was widely attended by children in the project. Residents had little opportunity or necessity to interact with residents in other parts of Alameda.

One activity provided an exception to the isolation of life for United Engineering Company employees. Softball leagues for civilian employees and military servicemen were organized by the Alameda Recreation Department. United Engineering Company workers played on their own team against teams from Moore Drydock, General Engineering, and Pacific Bridge.

Environmental Impacts

The United Engineering Company and the other shipyards and industries built in Alameda during World War II had a profound affect on Alameda's physical environment. In 1939, the western shoreline of the island was green with truck gardens. Marshes still lined the eastern and western fringes although much of the original western marshland had already been filled in.

Much of the intensive building in Alameda during the war took place on bay fill. The Naval Air Station, shipyards, and housing projects were built on what used to be farms, marsh, or bay sand. After the war, Alameda was left with what Woody Minor described as, "An extensive military and industrial complex [which] occupied the island's western end and northern waterfront, adjoined by small cities of temporary housing for war workers and military personnel" (Minor, June 1991).

The Post War Period in Alameda

Housing

The effects of the war lingered after 1945 in the form of the "military and industrial complex". The temporary war housing was still occupied as much of the immigrant civilian workforce stayed in Alameda. Despite the decline in the shipbuilding industry, Todd remained one of Alameda's main employers. The servicemen returned home, adding new stress to Alameda's housing and social service capacities. In November 1945, 266 families were assigned to vacant units in the housing projects. Servicemen and veterans were given preference and filled 71% of these units. In 1946, the number of applicants for AHA housing peaked at about 1,000 (Minor, June 1991).

The Chamber of Commerce made several attempts to encourage wartime civilian workers to leave the area. They passed a resolution in August 1944 to demolish the temporary wartime housing "at the earliest date possible". The resolution stated that the housing would no longer be needed after the wartime industries were scaled back to pre-war levels. The resolution stated further that "said temporary housing would in fact constitute actual slum districts in the post-war period". In 1945, servicemen and veterans were given preference for public housing and in 1946, a law was passed making only servicemen and veterans eligible for AHA housing. Despite these efforts, civilian workers comprised 50% of AHA housing residents as late as 1947. By 1949, most residents were military or ex-military (Minor, 11 in series).

The demolition of public housing began in the 1950s. The AHA purchased five of the projects including a portion of the Estuary Project. About two thirds of the Alameda projects were closed in the early 1950s. As this housing was closed and demolished, some tenants objected. Although efforts to retain the housing failed, seeds of a larger tenant's movement were planted. Many servicemen were relocated to other cities, some tenants found housing elsewhere in Alameda or the Bay Area, and some moved into the remaining Alameda projects.

By 1960, only 1,500 units of public housing remained. The AHA planned on demolishing the remaining projects leaving no public housing in Alameda. In the 1960s the remaining project tenants organized and fought for permanent low-income housing. The Alameda branch of the NAACP, established in May 1954, was deeply involved in this controversy. Albert DeWitt, a project tenant and the secretary of the NAACP housing committee, noted that lack of housing was a major problem for Alameda's black population. In the early 1960s, according to the NAACP, about 600 black families were forced to move out of the Alameda projects and into the Oakland ghettos. No affordable housing was available in Alameda. During this period, the black population of Alameda declined from more then 8% in 1950 to about 2.6% by 1970.

Todd Shipyard and its Impacts on Alameda

In the post war period, after the UE Alameda yard was sold to Matson Navigation and leased to Todd Shipyards Corporation, Todd was the only shipyard in Alameda that continued functioning in the ship repair industry. Many of the civilian workers who stayed in Alameda continued in the ship repair business at Todd. Many of these workers occupied the Estuary housing and were a part of the organized resistance to the demolition of the temporary wartime housing units in the 1950s and 1960s.

Estuary Housing Project

In 1964, the AHA voted unanimously not to extend the existing lease on the Estuary Project. The buildings were sold prior to the expiration of the lease and the new owners opted not to demolish the buildings. In November 1965, Estuary housed about 131 families. This number dropped to 46 in December. In June 1966, only 23 families remained, half of whom were black. That summer a three-day camp-in at Franklin Park was organized by the NAACP. The protesters were mostly black children. On 22 June 1966, the mayor agreed to rehabilitate the Estuary Project to decently house the remaining tenants. In November 1967, Estuary's population increased to about 80 families in 14 buildings. In 1968, the Estuary Project was again scheduled for demolition to make way for the Southern Crossing, a proposed new bridge over the bay, which involved a freeway connector at the Estuary Project site. By November of that year, all 81 resident families were relocated. Demolition of the buildings began in December.

Environmental Impacts

The industrial nature of Todd's work and the lack of environmental regulations added to the environmental degradation of Alameda in the postwar period. Todd employed standard practices, many of which would later come to be widely understood to degrade the environment. Among these practices, docking ships dumped ballast water carrying exotic plant and animal life that infested the bay and endangered native plant and animal species. Ships coming in for repair often leaked oil and fuel into the bay. Dredging of wet basins caused a host of problems.

The most notable environmental disaster was an oil spill that occurred in 1961. Todd was found guilty of polluting the estuary which was a Fish and Game Code misdemeanor, resulting in a $500 fine. Coast Guardsmen testified that oil was leaking from a damaged ship in drydock and that Todd workers drove the oil patches away from the dock area using a fire hose. The oily fuel formed a tar-like film over 2500 square feet of the estuary. (*Oakland Tribune*, 12 April 1961) It is easy to imagine that many such spills occurred earlier, especially during the war, and passed without being noted by newspapers. The impact of such events is difficult to determine but potentially had serious impacts on bay wildlife and water quality.

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V. PROJECT INFORMATION

This report was prepared for the U.S. Army Corps of Engineers and the Port of Oakland in accordance with a Memorandum of Agreement (MOA) between the U.S. Army Corps of Engineers, San Francisco District and the California State Historic Preservation Officer concerning the former United Engineering Company Shipyard. The Port of Oakland and the City of Alameda were concurring parties to the MOA. The MOA was created because of a proposal by the U.S. Army Corp of Engineers in partnership with the Port of Oakland to sponsor the Oakland Harbor Navigation Improvements Project. This project "would deepen Oakland Harbor channels and berth areas from –42 feet mean lower low water (MLLW) to –50 feet

MLLW, with 2 feet overdredge allowance" and widen some portions of the channels. These actions, which would constitute an Undertaking under Section 106, would result in the demolition of several buildings and structures at the former United Engineering Company Shipyard. Because the shipyard had been determined eligible for the National Register of Historic Places, the Undertaking would have an adverse effect on the property. Under the MOA, the following HAER documentation has been prepared: this written historic and descriptive report on the shipyard as a whole, seventeen separate reports on individual buildings and structures in the shipyard, and photographic documentation.

This report was prepared by Michael R. Corbett, architectural historian, Berkeley, California with substantial contributions by two research associates. Historical material on the Southern Pacific Company and on the years the facility has functioned as a shipyard was prepared by Tamar Ragir. Jody Stock wrote the property descriptions in the reports on individual building and structures. Corbett prepared this report as a subcontractor to Basin Research Associates, San Leandro, California. The photographs were taken under a separate subcontract by David De Vries, Mesa Technical, Berkeley, California. Basin Research Associates was under contract to g. borchard & associates, Oakland, California.

In addition to the project team, others played significant roles in the preparation of this report. Woodruff Minor provided research suggestions and access to his personal files. Stan Kintz provided access to the extensive collection of files of Alameda Gateway, Ltd. Richard Krinks provided information and access to the property. Celia McCarthy, Port of Oakland, facilitated access to the various properties and assisted with logistical and other requirements.

FIGURES

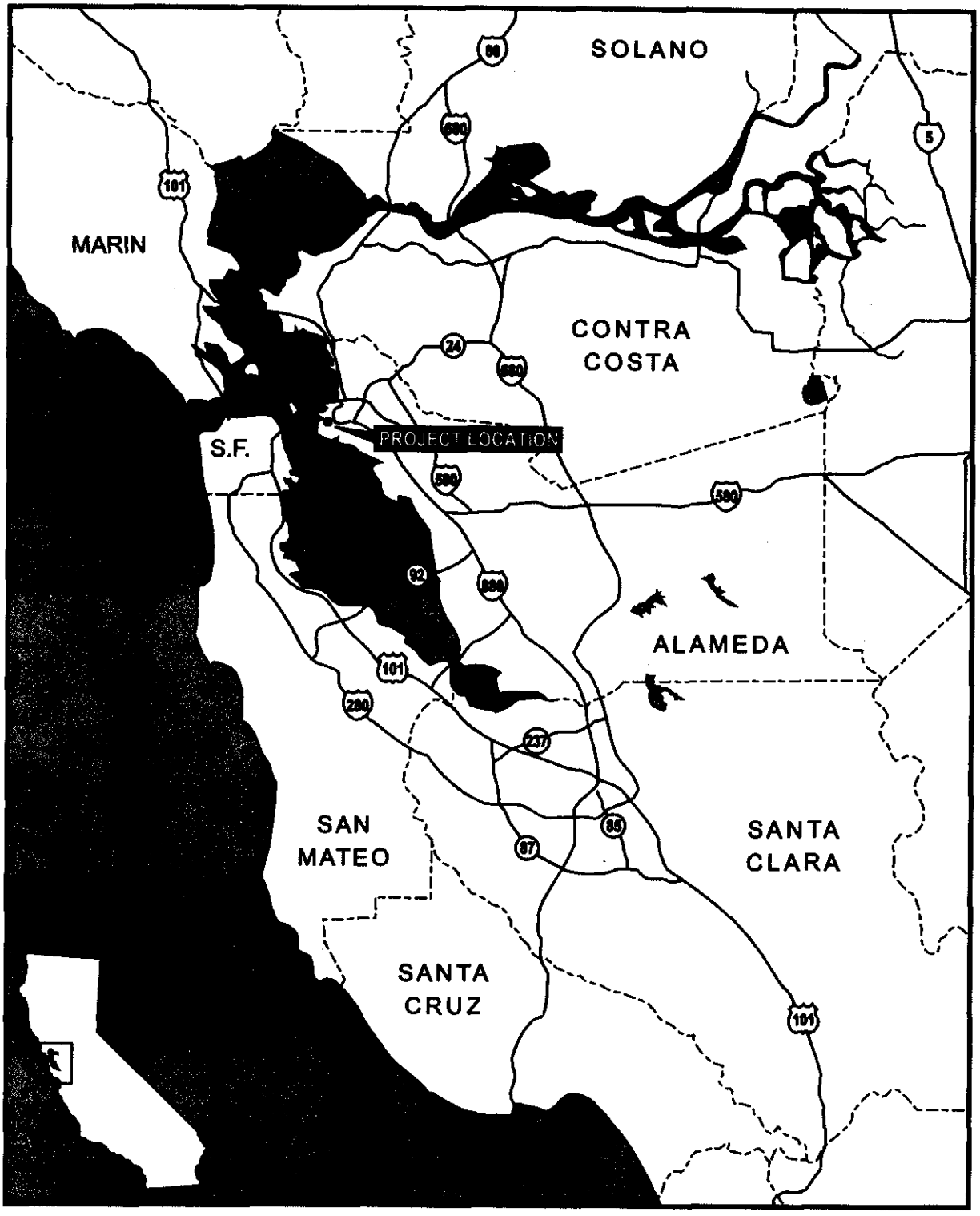

Figure 1: General Project Location

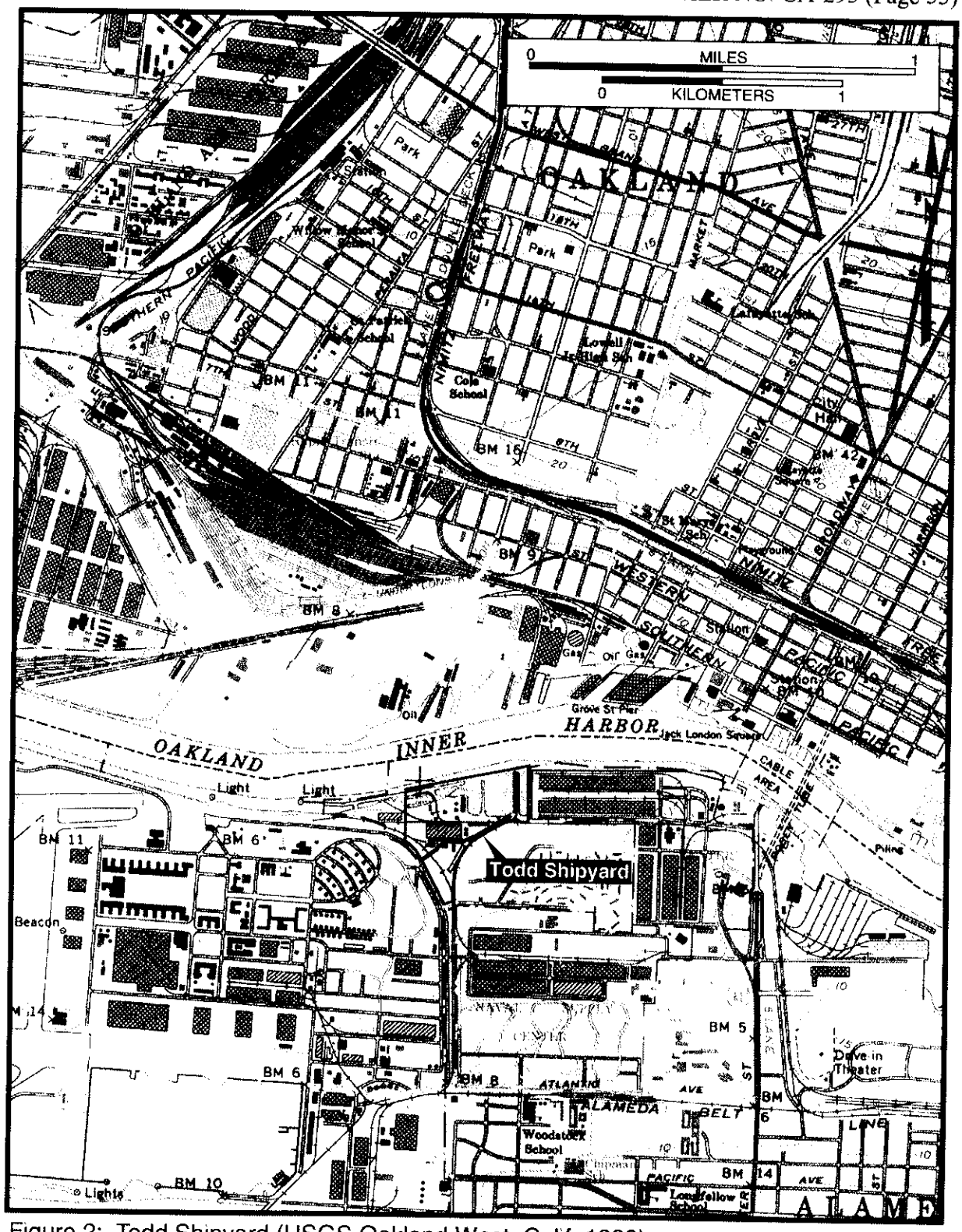

Figure 2: Todd Shipyard (USGS Oakland West, Calif. 1980)

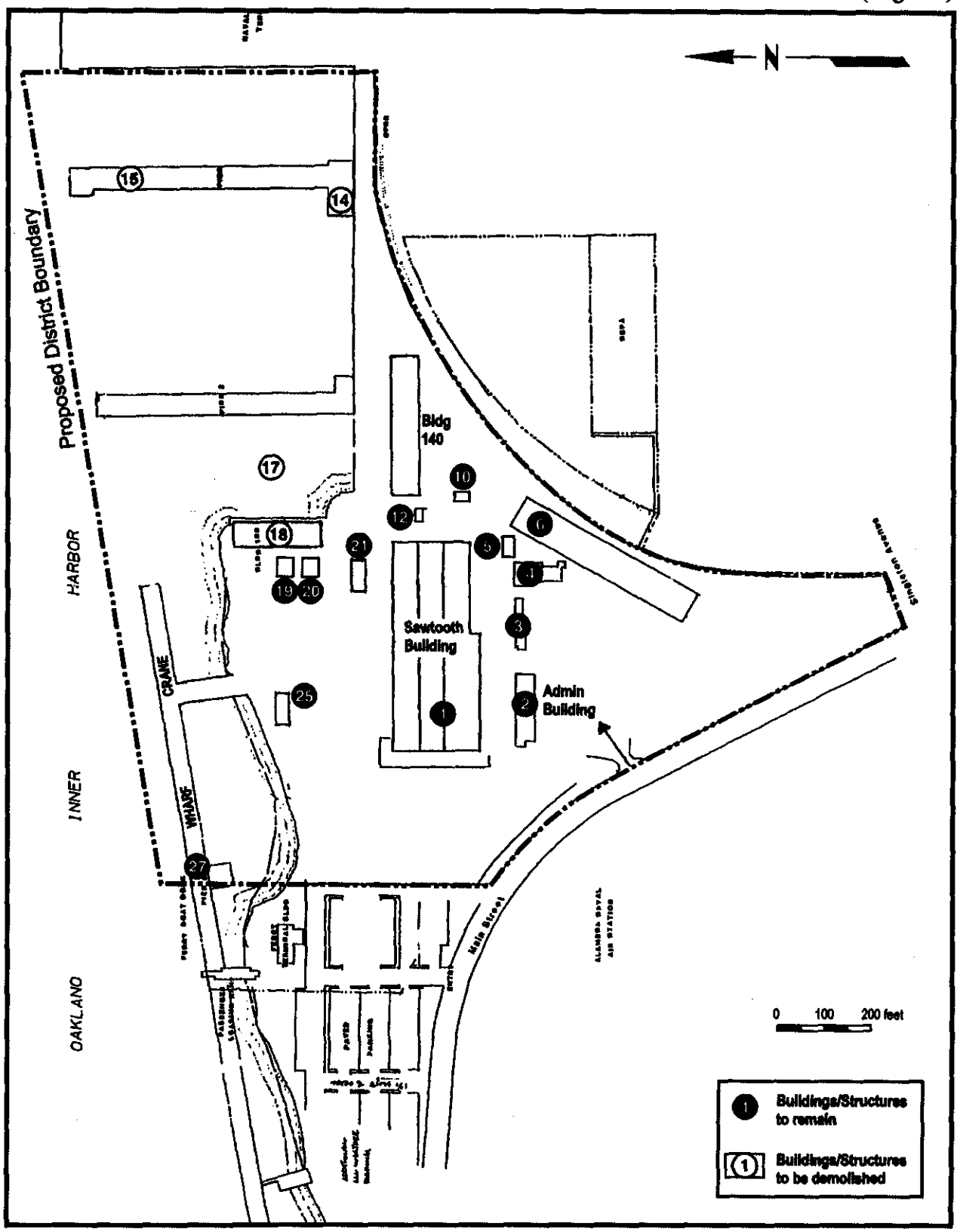

Figure 3: Todd Shipyard with Building Locations